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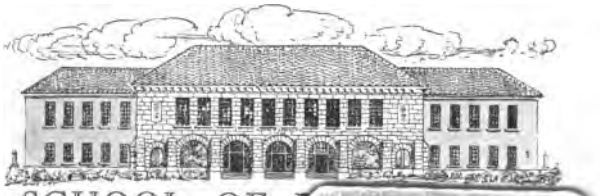
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PROCEEDINGS

OF THE

ELEVENTH ANNIVERSARY

OF THE

UNIVERSITY CONVOCATION

OF THE

STATE OF NEW YORK,

HELD JULY 7TH, 8TH AND 9TH, 1874.

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EXECUTIVE COMMITTEE,

For the Year 1873-74.

EDWARD NORTH, L. H. D., *Hamilton College.*
ELIPHALET N. POTTER, D. D., *Union University.*
JOSEPH ALDEN, D. D., LL. D., *State Normal School.*
ELISHA CURTISS, A. M., *Sodus Academy.*
AARON WHITE, A. M., *Canastota Union School.*
LEVI D. MILLER, A. M., *Haverling Union School, Bath.*
MERRILL E. GATES, A. M., *Albany Academy.*

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THE UNIVERSITY CONVOCATION

OF THE

STATE OF NEW YORK.

I. Sketch of its Origin, Objects and Plan.

[Reprinted from the Proceedings of former years, by direction of the Convocation.]

At a meeting of the Regents of the University, held on the 9th day of January, 1863, the reports of colleges and academies, and their mutual relations, being under consideration, the following resolution was unanimously adopted:

Resolved, That it is expedient to hold annually, under the direction of this Board, a meeting of officers of colleges and academies, and that a committee be appointed to draft a programme of business for the proposed meeting, to fix the time and place, and to make such other arrangements as they may deem necessary.

The committee of arrangements on the part of the Regents were Chancellor Pruyn, Governor Seymour, Mr. Benedict, Mr. Hawley, Mr. Clinton, Mr. Perkins and Secretary Woolworth.

The meeting was held according to appointment, on the 4th and 5th days of August, 1863. Chancellor Pruyn briefly stated the objects entertained by the Regents, which were mainly "to consider the mutual relations of colleges and academies, and to promote, as largely as possible, the cause of liberal education in our State. While it is a part of the duty of the Regents of the University to visit the fourteen* literary colleges and more than two hundred academies subject to their supervision, it is obvious that this cannot be done as frequently as desirable, and that some such method as is now proposed, whereby teachers may compare views with each other, and with the Regents, and discuss methods of instruction and general modes of procedure, is alike practicable and necessary.

"A law enacted more than three-fourths of a century ago was cited, by which the University was organized and clothed with powers

*Now twenty-three (1874).

similar to those held by the Universities of Cambridge and Oxford, in England. The University of the State of New York, though generally regarded as a legal fiction, is, in truth, a grand reality. The numerous institutions of which it is composed, are not, indeed, as in England, crowded into a single city, but are scattered, for popular convenience, over the entire State. It is hoped that the present meeting will more fully develop this fact, in accordance with which the officers of colleges and academies now convened are cordially welcomed as members of a great State University. It is also confidently expected that the deliberations now inaugurated will result in the more intimate alliance and coöperation of the various institutions holding chartered rights under the Regents of the University."

The Chancellor and Secretary of the Regents were, on motion, duly elected presiding and recording officers of the meeting. A committee, subsequently made permanent for the year and designated as the executive committee, was appointed by the Chancellor to prepare an order of proceedings. Among other recommendations of the committee, the following were submitted and unanimously adopted:

The Regents of the University of this State have called the present meeting of the officers of the colleges and academies subject to their visitation, for the purpose of mutual consultation respecting the cause of education, especially in the higher departments. It becomes a question of interest whether this convention shall assume a permanent form, and meet at stated intervals, either annually, biennially or triennially. In the opinion of the committee, it seems eminently desirable that the Regents and the instructors in the colleges and academies should thus meet, with reference to the attainment of the following objects:

1st. To secure a better acquaintance among those engaged in these departments of instruction, with each other and with the Regents.

2d. To secure an interchange of opinions on the best methods of instruction in both colleges and academies; and, as a consequence,

3d. To advance the standard of education throughout the State.

4th. To adopt such common rules as may seem best fitted to promote the harmonious workings of the State system of education.

5th. To consult and coöperate with the Regents in devising and executing such plans of education as the advanced state of the population may demand.

6th. To exert a direct influence upon the people and the Legislature of the State, personally and through the press, so as to secure such an appreciation of a thorough system of education, together with such pecuniary aid and legislative enactments, as will place the institutions here represented in a position worthy of the population and resources of the State.

And for the attainment of these objects, the committee recommend the adoption of the following resolutions:

Resolved, That this meeting of officers of colleges and academies be hereafter known and designated as "The University Convocation of the State of New York."

Resolved, That the members of this Convocation shall embrace,

1. The members of the Board of Regents.
2. All instructors in colleges, normal schools, academies and higher departments of public schools that are subject to the visitation of the Regents, and (by amendment of 1868) the trustees of all such institutions.
3. The president, first vice-president, and the recording and corresponding secretaries of the New York State Teachers' Association.

Resolved, That the Chancellor and Secretary of the Board of Regents shall act severally as the presiding officer and permanent secretary of the Convocation.

Resolved, That the meeting of this Convocation shall be held annually, in the city of Albany, on the first Tuesday in August [see *amendment*], at 10 o'clock, A. M., unless otherwise appointed by the Board of Regents. [*Amended*, in 1873, as to the time of meeting, by making it the first Tuesday after the Fourth of July, except when the Fourth occurs on Monday, in which case it shall be the second Tuesday thereafter.]

Resolved, That at each annual Convocation the Chancellor shall announce the appointment, by the Regents, of an executive committee of seven members, who shall meet during the recess of the Convocation, at such time and place as the Regents may direct, with authority to transact business connected with its general object.

At the fourth anniversary, held August 6th, 7th and 8th, 1867, it was

Resolved, That the Regents be requested to invite the attendance of representatives of colleges of other States at future anniversaries of the Convocation.

At the fifth anniversary, held August 4th, 5th and 6th, 1868, the following resolutions were unanimously adopted:

Resolved, That there be appointed by the Chancellor, at each annual meeting, a committee of necrology, to consist of three persons.

Resolved, That it shall be the duty of each member of the Convocation to notify the chairman of the committee of necrology of the decease of members occurring in their immediate neighborhood or circle of acquaintance, as an assistance to the preparation of their report.

Resolved, That the secretary publish, with the report of each year's proceedings, the original resolutions of 1863, as they are or may be from time to time amended, together with the two foregoing, as a means of better informing the members of the Convocation in regard to its nature, and the purposes of its organization.

II. MINUTES OF THE ELEVENTH ANNIVERSARY, JULY 7, 8 AND 9, 1874.

The sessions of the eleventh anniversary of the University Convocation of the State of New York, were held at the Capitol, in the city of Albany, beginning on Tuesday, July 7, 1874, at 10:30 A. M., and ending on Thursday, July 9, at 1:00 P. M.

Chancellor Pruyn, as President *ex officio*, called the Convocation to order, and made a brief address of welcome on behalf of the Board of Regents. He adverted to the fact that the last Convocation changed the time of the meeting, to make it follow more closely the annual commencements of the colleges, in the hope that the attendance from the colleges will be rendered more convenient and general. He stated that while the interests of education have generally advanced satisfactorily during the past year, the academies have experienced an unexpected and very serious reverse, through the failure of the last Legislature to continue the appropriation of $125,000, made to them during each of the two preceding years. The Convocation will no doubt take this important subject into consideration during the present meeting. The range of topics announced for discussion is very wide, and it may reasonably be expected that the proceedings will be of marked interest. Dr. North, the Chairman of the Executive Committee, has labored earnestly to provide the material for this meeting, and very much of whatever instruction and interest result will be due to his efficient services in this capacity.

At the request of the Chancellor, Mr. Wetmore, the Senior Regent, and Mr. Regent Hale added brief remarks, respectively referring to the history of education in this State, and the important relations and influence of the Convocation in the matter of public instruction.

At the Chancellor's request, and in accordance with former usage, the Convocation united in saying the Lord's Prayer, led by Rev. Dr. Van Rensselaer, of Hobart College.

The Executive Committee appointed at the last Convocation, and having, in connection with the permanent officers, charge of the arrangements for this anniversary, consisted of the following persons:

Edward North, L. H. D., Chairman, Hamilton College.
Eliphalet N. Potter, D. D., Union University.
Joseph Alden, LL. D., State Normal School.

Elisha Curtiss, A. M., Sodus Academy.
Aaron White, A. M., Canastota Union School.
Levi D. Miller, A. M., Haverling Union School.
Merrill E. Gates, A. M., Albany Academy.

Dr. North, as Chairman of the Executive Committee, made a Preliminary Report, and submitted the order of exercises for the day, as agreed upon by the Committee, from which it would be necessary to depart in case of the non-arrival of any to whom places had been assigned.

Principal Wm. Harkins, of Jordan Academy, presented a paper on the "Science of English Grammar." This, he remarked, is a frequent topic; but truth, to be accepted, needs to be frequently restated. The present is eminently a scientific age; accordingly, English grammar should be taught scientifically. Yet no essential progress in the science of grammar has been made since Lindley Murray. When asked to name a good English grammar, we always evade the question by naming the best. The common defects of our grammars are of three kinds: 1. Unmethodical treatment; 2. Inexact definition; 3. Incorrect classification. The study of English should be historical, and based on Anglo-Saxon. Orthography and prosody should be excluded from our grammars. The definitions should be scientific and accurate — the classification logical. He then suggested a new classification of the verbal phenomena of our language, which excludes the future tense and the potential mood. This historical method of treating the verb, he believed, would soon procure it universal use.

Regent Hale raised the question whether there is really any such thing as the Science of *English* Grammar, as distinguished from the science of language generally; to which Principal Harkins replied that he intended by the title of his paper, the Science of Grammar as applied to the English language.

Principal M. P. Cavert, of Rhinebeck, said that he did not propose to discuss the criticism on the title of the paper. The matter of English Grammar gives teachers more trouble and annoyance and perplexity, with less satisfactory results, than almost any other subject pursued in our schools, and always will until they teach the language more, and the grammar, so-called, less. Parents, teachers and pupils seem to think that in studying English Grammar they are learning the English language. Nothing is farther from the truth. Grammar is not language, it is an outgrowth of language. We call it the "science of language," and attempt to give the science before giving the language to which it applies.

The true way is to build up in the mind of the pupil an extended knowledge of words, their origin, their signification and proper use, in expressing thought by every day practical exercises. Should it so happen that a boy, so trained until thirteen or fourteen years of age, shall leave school before having studied grammar, he will go into life better prepared, as a rule, to express his thoughts in appropriate words, than the boy who studies grammar from ten to sixteen years of age without this necessary study and practical training in the use of language. Facts show that the latter, after all his labor, is a wretched bungler in the use of his mother tongue.

Principal John W. O'Brien, of Griffith Institute, Springville, read a paper on "The Relation of Academies to Common Schools."

Regent Rankin thought the paper just read, one of great interest, inasmuch as it seems to demonstrate that there is a great defect somewhere in the practical workings of our system of education.

Chancellor Pruyn (Vice-Chancellor Benedict in the Chair) thought it greatly to be regretted that such men as Principal O'Brien, as evinced by this paper, could not have been heard on the subject by the last Legislature, in which body widely different views prevailed.

Dr. Clark, of Canandaigua, said: I thought, Mr. Chancellor, that the gentleman who has just presented the paper, drew his pictures from Columbia county, which is under the immediate eye of my friend, Dr. Flack; or from Jefferson county, or from Oswego, or from Oneida, the home of Hamilton College; but I find it is taken from Erie county, and I think it would fit not only that, but Ontario county, and in fact every county in the State. The facts stated in the paper are true in my own county, which I believe to have as good common school supervision as any county in the State; and yet in the farming districts, outside of the villages, the schools do not seem to have kept pace with the progress of the graded schools of the county.

This is to be explained partly from the fact that these rural schools are small, averaging in the summer from 15 to 20, and in the winter 20 to 25; partly from the old difficulty of a rigid economy in the employment of teachers, and partly from the low estimation in which an education is held by many parents, holding that a lad of 12 or 14 is old enough to leave school to enter upon his life work. The result is that a great many of the young men who come up to our academies are poorly, very poorly prepared, and hence a large part of our academic work is really doing over that of the common school.

Dr. Hamilton, of Oswego, alluded to the "Young America" ideas of education now too prevalent, and deprecated the attempt to study so many things in such a minimum of time.

Principal Flack, of Claverack, as Chairman of a Committee appointed by the last Convocation, made a statistical report on the instruction of common school teachers, which was discussed at some

length and recommitted, with power to perfect the same for publication in advance of the full proceedings.

Recess until 3:30 P. M.

AFTERNOON SESSION — THREE AND ONE-HALF O'CLOCK.

Professor R. B. Welch, D.D., LL. D., of Union University, read a paper entitled "The Modern Theory of Force," (Regent Wetmore in the chair), of which the following is an abstract: He explained the theory as not only involving the correlation and conservation of physical forces, but as applying the doctrine of vitality and mental action, declaring that life and even thought is correlated to the physical forces. It was stated that the issue turns mainly upon our conception of forces and the scope of their correlation, so that the essential question whether life and mind are forces runs through the entire discussion.

The subject was treated in a two-fold mode of argumentation, showing the unsoundness of the theory. First: By indirect arguments drawn from the discordant definitions, the contradictory testimony of the experiments, the inharmonious notions of the factors and the scope of correlation involved in the theory. Secondly: By direct arguments drawn from the nature of mind and of life, in which it was shown that mind and life are essentially different from heat, light, chemical affinity, etc., in their nature and phenomena contradistinguished, knowing, controlling, employing and applying these physical forces, yet not themselves forces, but mental and vital activities, thus ruling out correlation of forces as not applying in terms, nor possible in fact. He then passed to the consideration of the modern theory of evolution, as based upon the modern theory of forces, showing by a variety of arguments not only its unsoundness in its foundation, but its utter invalidity in itself.

After the reading of the paper, which, by permission of the Convocation, extended to an hour and a quarter, President Van Rensselaer offered the following resolution, which was referred to the Executive Committee:

Resolved, That the Regents of the University be requested to print, as soon as practicable, the able and learned paper read before this Convocation by Professor Welch.

Professor William D. Wilson, D. D., L. L. D., L. H. D., of Cornell University, read a paper on "Positive and Negative Terms in Mathematics." He began by alluding to the want of clearness and accuracy in the various definitions of "number" and of "quantity," defining numbers as the how-many-ness of objects, and quantity as the how-much-ness of an object considered as one. He then spoke of the application of number to quantity as a means of indicating its

amount, and discussed the nature of zero and infinity from this point. He then proceeded to show that we have really no negative number, but only negative quantities, and illustrated his proposition by reference to the processes of both addition and multiplication; and, in conclusion, he stated his belief that the best and only successful means of illustrating the abstract and abstruse principles of mathematics and metaphysics, is an appeal to the facts and objects in nature.

The subject was discussed by Professor Avery, of Hamilton college, who remarked that infinity and zero mean in mathematics, simply, a very large and a very small quantity.

Professor Docharty illustrated the subject of infinite and negative quantities, by reference to a sum of money from which successively less amounts are taken until nothing be supposed to be taken, and then an infinite number of visits might be made without exhausting the same.

Professor Charles Davies said, that in view of the papers read at the last Convocation and to-day, which expressed views quite at variance with those usually received, he would be disposed to prepare a paper for the next Convocation, embodying his own views. He spoke of infinity and zero as the limits of quantities, and said that the best thinkers are divided in opinion as to whether these limits can be reached through these quantities themselves. Newton held that they may at least be conceived of as being so reached.

Professor J. B. Thomson remarked that Dr. Wilson seems to have taken (not stolen) some of his own thunder. He especially desired to keep the idea of number associated with unity.

Professor Z. H. Potter, of Cornell University, described a new mathematical symbol to denote quantities so small as to have no assignable value. He said: The mathematical symbol commonly known as [0] zero, is ambiguous in its meaning since it is applied by mathematicians to denote, sometimes the entire absence of quantity, and sometimes quantities so small as to have no assignable value.

To meet this difficulty, I propose the introduction of a new symbol indicated thus [○|○], to denote quantities so small as to have no asignable value.

By adopting this new symbol [○|○], we shall leave [0] zero to its proper office, viz., that of representing the entire absence of quantity, and our revised system will then stand as follows:

0 = The entire absence of quantity.

○|○ = Quantities so *small* as to have no *assignable* value.

○○ = Quantities so *large* as to have no *assignable* value.

Professor Davies questioned the propriety of this innovation.

Regent Perkins suggested that there is a wide difference between what we can actually do, in our approximations to zero and infinity, and what we can conceive to be already done in these directions.

Dr. North announced that Professor Tayler Lewis will read his paper, "The Old School-master," to-morrow at 11 o'clock, A. M.

Recess until 8 P. M.

Evening Session — Eight o'Clock.

Superintendent L. S. Packard, of Saratoga Springs, read a paper on "School Supervision."

The writer of the paper made a general discussion of the so-called supervisory system of the State. The following points were made: The system is chaotic and inefficient; it fails to give supervision, in its just sense, to the schools of the State; as a rule, the school officers of the State do not and cannot exercise all the functions and perform all the duties of school supervisors. The exceptions are to be found in cities and villages where a Board of Education and its Superintendent are legally able to perform all the above-named duties. The paper reviewed all the school officers of the State, and comparing them with an assumed standard, showed the elements of school supervision which each possesses and lacks. It also presented a plan for unifying the system, and for placing every educational institution in the State, which receives public money, under the control of such a system.

Secretary Woolworth thought this a very important subject, and remarked with high commendation upon the supervision exercised, for example, by the Albany Board of Public Instruction, as illustrative of what may be done more or less completely in other localities.

Principal Bradley, of the Albany High School, alluded to a very thorough examination, now in progress, of candidates for appointment as teachers in the city schools; but, in addition to all that has been offered, he said, we must have organization and division of labor. We want also, as at last secured in Massachusetts, the town instead of the district, as the unit of school supervision.

Principal Flack suggested that a paper so thoughtful, and perhaps radical, should evoke some positive action from this body. It is of little consequence, comparatively, *how* school officers are appointed, and the people are not jealous on this point; the great thing is to have the right men appointed.

President Allen, of the Alfred University, thought the subject of Superintendent Packard's paper one of the most important that can come before us; adding that in view of what transpired in the last Legislature, it seems most desirable that some positive action be taken by the Convocation; and on motion of Superintendent Packard, the Chancellor was requested to appoint a committee to report such action as they deem proper.

Principal Cecil F. P. Bancroft, of Phillips Academy, Andover, Mass., read a paper on "The Relations of Secondary Schools to Colleges" (Regent Perkins in the Chair).

The paper began with a brief *resume* of the changes now going forward both in colleges and academies, and the consequent change of their relation to each other. These changes furnish the opportunity not only for needed reforms, but also expose our school systems to dangerous innovations. The college must be maintained in its integrity, and not be dropped from our scheme of education, in imitation of foreign organizations. An incidental plea was made for a distinctively American education, adapted to our national wants and opportunities.

The advanced standard of admission to the college requires a higher grade of instructors, and to secure them their liberty must be respected, their tenure permanent and their salary ample. The secondary schools must have larger endowments, in order to do work now done by colleges. The most striking reform suggested, was to make the diploma of the secondary school take the place, under proper safeguards, of the college entrance examination. This was shown to be desirable for college and academy teachers and pupils, to have been successfully employed in Germany for a third of a century, and to have been recently partially introduced in Michigan.

The disciplinary character of secondary education demands that it be protected from all disturbing forces. The object of education is power rather than information, and the present system discourages development and encourages cram and superficial training. The essay closed with an approval of the new requirements in certain studies, while lamenting that they were not made in the line of quality rather than quantity; and an appeal to teachers to make this transition period in education a period of absolute and permanent improvement.

Vice-Chancellor Benedict expressed his high gratification with Principal Bancroft's paper, which, as to subject-matter, speaks for itself.

Dr. Jewell, of Poughkeepsie, said: Professor Bancroft's paper is sharp, practical and to the point. Its subject, translated into our New York dialect, is a plea for the academies. A great mistake has been made in this State, in assailing the academies. It is alike suicidal, whether we look at the interests of the colleges, or at those of the common schools. With regard to the perfection, power and success of our whole school system, the academies, as the middle schools standing between the colleges and the common schools, hold precisely the position which the middle classes hold in the commonwealth. It is not what you do for the higher or the lower classes, but what you do for the middle classes, that determines the intelligence, the power or the perpetuity of the commonwealth. Make them what they ought to be, and they will at once elevate the lower classes and temper the higher. It is so with the academies. Improve them, endow them, enfranchise them, make them what the paper urges.

the abodes of eminent, individual teaching — and they will furnish qualified pupils for the colleges, and qualified teachers for the common schools — the two grand needs of our educational system. They will build up in both directions as nothing else will.

Principal Wm. Harkins said he thought the gentleman from Massachusetts had sounded the key-note to the solution of the most important problem that had as yet engaged the attention of this body, viz.: The school question. In previous discussion, the University and College had been omitted as a factor of the educational system. Mr. Harkins thought that should the requirements to admission to such institutions be made more rigorous, the result would be beneficial to the academies or secondary schools, and re-act favorably upon the common schools. But he believed the higher institutions should be made more of a necessity. At present, a large portion of professional men are not college graduates. He thought that every one attending a law or medical school should previously have graduated from college, and that if this became a universal rule, a great improvement in our educational system would result.

Principal Watkins, of Hungerford Collegiate Institute, said:

Mr. Chancellor — I rise to heartily indorse two points made in Principal Bancroft's paper. One, at which I am surprised, since he comes almost from the shadow of Harvard, yet with which I entirely agree, is regret at the advanced requirement in amount demanded by some of our eastern Colleges. Much better would it be if they would retain their old standard in amount, but advance the standard in quality, making the entrance examination upon what is required searching and exhaustive. Considering the great haste of our young men to finish their school and college life, and also the resources of our secondary schools, it seems to us that an additional year of study required to enter college is a burden both to student and to academy. The second point is incidental, but important. It pertains to what was said in regard to academy endowments. Endowments are the only hope of our academies, and I wish that the trustees of all our academies could attend every annual Convocation, and from the subjects here discussed from year to year, be inspired to prolonged and effective efforts for the endowment of the academies with which they are connected.

Professor Mears suggested there was possibly, in Principal Bancroft's paper, an overstatement as to college examinations in this State, as compared with New England. The colleges are reasonably somewhat jealous, as well as the academies, in regard to the standard of admission.

On motion of Dr. Wilson, made in view of the fact that Principal Bancroft is not strictly a member of the Convocation, the thanks of this body were presented for his valuable paper, and the Secretary was directed to notify him of this action.

Professor John W. Mears, D. D., of Hamilton College, read a paper on "Sir William Hamilton, and other teachers of Philosophy," of which the following is an abstract:

Professor Mears commenced by showing the marked distinction between the philosophic tendencies of the English and Scotch people, the former inclining to empiricism, sensationalism and materialism, as shown in their leading philosophers, Hobbes, Locke, Bentham, Mill, Huxley, Darwin and Spencer, while the Scotch thinkers, represented in such names as Reid, Stewart and Hamilton, were upholders of the spiritual philosophy. Hamilton, the chief of the Scottish school, was born in Glasgow in 1788, and early gave promise of intellectual greatness. At the age of twenty-one, the extent of his learning, especially in the departments of ancient and mediæval philosophy, was enormous. His examiners at Oxford found the attainments of the young candidate for honors far beyond their own. His appetite for books was voracious, yet his learning was systematized with scrupulous care.

It is to him that we owe the most crushing exposure of the central falsehood of phrenology, viz.: That the protuberances of the external cranium are a clue to the shape of the lobes of the brain. Sir William dissected one thousand brains and skulls of over fifty different species of animals, with his own hands, in his arduous and triumphant researches into this problem, and since that time, the chief position of craniology or phrenology may be said to have been obsolete.

Sir William Hamilton's career as a philosopher properly commenced with the celebrated article contributed to the Edinburgh *Review*, in 1829, on the "Philosophy of the Conditioned." Although it was a powerful criticism of the teaching of the French philosopher, Cousin, its learning and ability secured the warm admiration and the lasting friendship of the chivalrous Frenchman for Sir William.

The philosopher was a very reluctant writer, and owed perhaps more than half his reputation and usefulness to the aid and stimulus afforded him by his wise and helpful wife. In 1836, he was elected Professor of Logic and Metaphysics in the University of Edinburgh. In 1844 he was stricken with paralysis, but he retained his wonderful mental powers for a number of years afterward, and died at his post, in May, 1856, aged 68.

The remainder of the essay was occupied with a discussion of the different merits of leading teachers and text-books, the preference being given above all others to Sir William Hamilton's lectures, as affording the greatest amount of wholesome stimulus to the mind of the student.

Professor B. N. Martin expressed his high appreciation of Prof. Mears' paper upon Sir Wm. Hamilton, and concurred very heartily in the beautiful and just delineation of the character of that eminent

philosopher. Particularly would he concur in all that had been said of both the fact and the value of Hamilton's inspiring and quickening suggestions. He had undoubtedly done more to stimulate a spirit of philosophical inquiry than any English philosopher for many generations; and for this great service we owe him a debt of obligation which can never be too fully or too cordially acknowledged.

At the same time, there is in his philosophy one element not referred to in Prof. Mears' very interesting sketch, which ought to be recognized in any estimate of his value as a teacher, and that is his inconsistency. Those wonderful lectures, written, as has been so vividly described, from day to day, and enriched with all the learning of the ages, though repeated year after year, seem never to have been revised or corrected.

As a consequence of this haste, they are replete with inconsistent and conflicting statements. There is an utter lack of harmony in them. On almost every great doctrine of his philosophy, Hamilton's language is vascillating, and even contradictory. This defect is illustrated in his treatment of the aim of philosophy. He gives a beautiful view of the function of philosophy as consisting in the unification of knowledge. He shows how we gather an infinite variety of facts into a unity by conceiving them as effects of a few great causes, and then ascend, step by step, till all causes merge into the one First cause. But then, in treating of causes in the next chapter, he says that the cause includes all the stated antecedents of an effect, and that every cause is of necessity *plural.* Of course we never can, on that theory, reach a first cause; the most ultimate of all causes being not one, but many!

This heedless inconsistency marks Hamilton's discussion of almost every subject treated in his lectures, and goes far to nullify even the high value which must be attached to his suggestive teachings. For this reason chiefly, Professor Martin stated that he had been obliged to give up the use of Hamilton as a text-book. This constant development of inconsistencies, and even contradictory views, prevented students from acquiring settled and clear conceptions of philosophy.

In regard to Professor Porter's work, Professor Martin regarded it as one of very high value. It gives us the fullest and best statement of the views of recent philosophical writers that is anywhere to be obtained. But this comprehensiveness of view is not its highest merit. Not only does it analyze minutely and fully, but it passes a discriminating judgment upon every theory which it describes. On this account, the work has a value which belongs to no other. Professor Porter gives a critical, vigorous and generally just estimate of the whole body of recent philosophical discussions, and he shows a more complete and intelligent mastery of the great principles of the subject than any other of our psychologists has yet attained.

For these reasons, Professor Porter's work had been adopted in the New York University.

SECOND DAY.

Wednesday — Nine and One-half o'Clock, A. M.

Rev. Dr. Mears led the Convocation in the use of the Lord's Prayer.

Professor North, as Chairman of the Executive Committee, submitted the printed order of exercises for the day, and stated that the closing session on Thursday, will include necrological notices of several late members. The following names of deceased members have been handed in: President Fisher; Professors Evans, McNaughton, Wilcox, Cruttenden, and Rev. Dr. Pohlman. He requested that any other names which should be added to this list, be communicated at the earliest practicable moment.

Chancellor Pruyn invited the members of the Convocation to meet him at his residence, at the close of the evening session.

The Chancellor announced as the committee on the subject of "School Supervision," authorized last evening: Principal Flack, Superintendent Packard, and Principal Clarke.

A paper by Professor Albert H. Chester, on "Laboratory Practice" was read, in his absence, by Professor Mears.

Professor Le Roy C. Cooley, Ph. D., said that he was not quite willing to allow a paper so pointed, so practical, so just in the views it presents, to pass without comment. If science is an important element in the course of instruction, so the method by which it shall be presented demands the most careful attention. His own experience shows that in no other way, so well as by laboratory practice, can the truths of nature be brought in contact with the mind. He whom nature teaches will be well taught. Skill in manipulation is an incidental benefit of great value, but the peculiar mental discipline it secures is the object of supreme importance.

The very short course which his pupils have been able to take, has in some respects given a better discipline than his whole course of lectures. Without the lectures and the text-book, the laboratory practice would doubtless have produced indifferent results. He did not believe in teaching altogether by this method, but he did believe that a course of study in general chemistry ought to be supplemented by a course of practice, in which the mind may be brought in personal contact with the phenomena whose laws it investigates.

Principal White, of Canastota, said: Not only practice in chemistry is desirable and possible, but there is also great need of systematic practice in the use of the instruments by which the principles of natural philosophy are demonstrated. When a young man leaves college and becomes a teacher in an academy, he is introduced to the philosophical apparatus. It is scattered about — has been

neglected — some pieces lost — some broken — some spoiled by rust, or corroded by acids. What can he do? He begins to feel, as he never felt before, his lack of preparation for his work. If he has courage to enter upon the work of experimenting, as he should do, he may succeed, but it will be at a great cost of time and with unnecessary damage and loss to the apparatus.

But more commonly he will neglect this work, and an opportunity to accomplish a great good will be lost. The condition of collections of apparatus throughout the State, as is well known to the Regents, bears sorrowful testimony to the truth of these remarks, and to the urgent need of the course of instruction in the use of philosophical instruments which we now urge upon officers of colleges.

Instructor Bosworth, of Hungerford Collegiate Institute, remarked:

I find it possible, with limited room, to furnish facilities to pupils for obtaining a practical knowledge of the use of instruments. While using them, both body and mind are actively employed. Mechanical skill (so useful to every one) is obtained. I have had pupils for instance, after a little showing, become skillful in the use of the microscope, one of the most delicate of all our apparatus, and any one who has a fine instrument knows with what a nervous dread he sees an unskilled hand approach it; yet, after one or two short lessons, I have not hesitated to trust the instrument wholly in the hands of my pupils, even allowing them in turn to become instructors in its use. The instrument has not received the least injury, and the users of it gained knowledge in botany, physiology, chemistry, etc., that could be obtained in no other way.

So it is with the telescope and many other instruments. To young women, too, this practical, chemical and mechanical skill is of great importance. They have an immediate and great influence upon domestic economy, upon the proper administration of which so much of our comfort depends. I regard it, then, as very desirable that the instructor should allow the pupil, as far as practicable, the use of the chemical and physical apparatus.

President Van Rensselaer, of Hobart College, stated that while the curriculum of his college does not nominally include "Laboratory Practice," all needed facilities are afforded to those who desire them.

Professor Wilson said that what has been recommended has been done fom the outset at Cornell University. At first, students were each required to work in the chemical laboratory two hours a day for the two terms during which they were receiving lectures on chemistry. Now, however, the laboratory practice has been made optional with the higher mathematics. In the same way, acquaintance with the apparatus in the various branches of physics or natural philosophy is provided for, by requiring the students each in turn, on being called upon, to assist in getting ready for the lectures.

Besides, we have a course of optional work on physics, extending through one entire year in the laboratory. We get time for it — work is practicable by having all our recitations and lectures in the fore part of the day — from 8:15 A. M., to 1:15 P. M. The afternoon entirely, and a part of the forenoon of each day, is thus at the disposal of each pupil for laboratory work.

Mrs. Charles Kelsey, of the Cayuga Lake Academy, read a paper on "Teaching articulation to Deaf-mutes," which was listened to with the closest attention, and warmly applauded at its conclusion.

Instructor Edgar A. Enos, of the Brooklyn Collegiate and Polytechnic Institute, made a statement in regard to the inter-collegiate rhetorical contest, to be held in New York city, of which the following is an outline:

Mr. Chancellor, Ladies and Gentlemen — I appear before you this morning, not so much in the character of teacher as in that of a student. Yesterday, I received a note from Professor North asking me, somewhat to my surprise, to present before the Convocation some account of the inter-collegiate rhetorical contest, which for a year past has been engaging the attention of college boys; saying, in addition, that as I had not time to prepare a paper, I might make a brief extempore statement in regard to what had been done concerning the matter in question. Why Professor North should have selected me for this task, I can explain only on the ground of my having been a delegate to the Hartford Convention, at which the feasibility of an inter-collegiate contest was first favorably discussed. To Colonel Higginson, I believe, is due the honor of having first stated the idea of inter-collegiate literary meetings in America. It was suggested to him from a consideration of the manner in which, in England, college distinctions and college exclusiveness had been broken down, and the university interests built up by the system of inter-collegiate lectures. Colonel Higginson's original plan, however, merely contemplated the establishment of inter-collegiate scholarships based on competitive examinations. Correspondence with eminent educators and professional men had brought out the fact that Presidents McCosh, Porter, Chadbourne and Stearns, Chancellor Crosby, James T. Fields and others were in sympathy with the movement. A call was issued by the Colleges of Williams and Princeton, in the shape of a circular inviting each of the colleges in the United States to send three delegates to an Inter-Collegiate Literary Convention to be held at Hartford, Ct., Feb. 19, 1874. The object of the convention can be briefly explained. In the language of the circular: "It has long been a subject of reproach that students from different institutions never meet as contestants except to display their physical powers, and it is thought that contests in scholarship, essay-writing and oratory may be both pleasant and profitable. Discussions to this effect have been carried on in the collegiate and public press for several months past, the general tone of which leads us to believe that the movement will be acceptable. If consistent

with other engagements, Colonel Higginson will address the convention. It is recommended that delegates be appointed as quickly as possible, and that they consult their faculty as to the best means of promoting the proposed contests. The success of the movement will largely depend upon their ability and discretion, and if they come prepared to offer a plan, there is little doubt that by fusion of all the good qualities suggested, a work will be accomplished which must quickly advance the educational interests of the country. We hope that post graduate study and examinations will be one of the ultimate results."

In response to this call, forty delegates, representing fourteen colleges, met at Hartford. The colleges represented were: Bowdoin, Brown, Amherst, Williams, Trinity, Wesleyan, Hamilton, Columbia, University of the City of New York, Syracuse, Cornell, La-Fayette, Rutgers and Princeton. After a vast amount of discussion, in the course of which a number of delegates distinguished themselves in the domain of parliamentary law, the aid of Colonel Higginson having been invoked, the following constitution was adopted:

CONSTITUTION.

Article I. This association shall be entitled the Inter-Collegiate Literary Association of the United States, and shall consist of such colleges as shall ratify this constitution.

Article II. The object of this association shall be to hold annual competitive literary exercises and examinations at such times and places as the association itself may determine.

Article III. The officers of this association shall be a president, five vice-presidents, a secretary, treasurer, and an executive committee of one from each college of the association.

Article IV. The duties of these officers shall be those usually appertaining to their offices.

Article V. These officers shall be elected at each annual meeting of the association, and shall hold office until the election of their successors.

Article VI. The annual meeting of this association shall be held at the time and place of the annual exercises. Each college belonging to the association shall be authorized to send three (3) delegates.

Article VII. Special meetings of the association may be called by the president at the request of five colleges belonging to the association.

Article VIII. The standing committee appointed by the preliminary meeting shall have charge of the affairs of the association until the first annual meeting.

Article IX. This constitution may be amended at any meeting of the association, by a vote of two-thirds of the colleges represented at the said meeting.

Article X. This constitution shall go into effect on being ratified by five colleges.

After the adoption of the constitution, Princeton presented an elaborate and somewhat formidable scheme containing provisions not only for contests in every kind of rhetorical and oratorical work, but in every department of collegiate scholarship. The number of judges for each contest and the manner of appointing them, together with all the specific rules that should govern each particular case, were provided for with the most scrupulous and mathematical exactness. Every thing which human ingenuity and foresight could devise, was embodied in the scheme. Nothing was to be left for posterity to do. Of course, a plan so extensive and cumbersome was impracticable, and the convention wisely decided to make a more modest beginning, and to undertake only what it could be sure of carrying out successfully. The deliberation of the convention resulted at last in the following by-laws:

BY-LAWS.

Resolved, That this convention appoint a standing committee of five, who shall arrange for an inter-collegiate contest in oratory, to be held on ———, at ———, in accordance with the following rules:

1. Two contestants shall be chosen by each college belonging to the association; if, however, more than eight colleges enter for competition, each shall be entitled to but one representative. The term "college" shall not be taken as excluding members who have taken the degree of A. B., or any equivalent degree, within a year previous to the contest.

2. Three awards of honor shall be made by three judges, who shall be chosen by the standing committee from men of literary and oratorical eminence, and who shall not be professors or officers of any institution represented in the contest.

3. Each address shall be the speaker's own production, and shall not exceed ten minutes in delivery; and in making the award, the judges shall have regard both to matter and to manner.

Resolved, That the standing committee shall arrange for a competition in essay-writing, in accordance with the following rules:

1. Three judges shall be chosen by the standing committee, which judges shall propose two subjects, determine the length of each essay, and the time when the essays shall be handed in, and make an award for the best essay on each subject. These judges shall not be professors or officers of any institution represented in the contest.

2. Each college shall select at its discretion three representatives; if, however, the number of colleges competing shall exceed eight, each shall be restricted to but two representatives.

Resolved, That in addition to the awards of the judges, the committee be authorized to offer such pecuniary awards as they may deem feasible.

Resolved, That the standing committee invite the presiding officers of the several colleges represented in this association, to submit such

plans as may seem best to them for the more extended inter-collegiate examinations, and that said committee be instructed to report at the next annual meeting of the association.

On discussion, it was decided by a small majority that the first contest be held in New York, January 7th, 1875.

During the spring vacation, the standing committee met at New York and elected as judges on oratory, Whitelaw Reid, Rev. E. H. Chapin and William Cullen Bryant; and as judges on essays, Col. T. W. Higginson, James T. Fields and Richard Grant White.

The judges on essays have agreed upon the following rules:

I. A Prize of Honor shall be offered for the best, and an Honorary Mention for the second best essay on each of the following subjects:

1. Any Character or Play of Shakespeare, analyzed and criticized.
2. The Utilitarian Theory of Morals.

II. No essay shall exceed in length 5,000 words, or five pages of Harpers' Magazine.

III. Essays may be sent from any college belonging to the Intercollegiate Literary Association — under the provisions and with the restrictions above given — to George C. Kobbe, 19 West Forty-eighth street, New York, on or before October 1st, 1874.

The sum of $1,000 was guaranteed by the committee to start a fund for the scholarship prizes, and it is hoped that by September 1st, some definite plan will be agreed upon and prizes offered, although the project will not be put into practical operation until the second contest.

Professor Tayler Lewis, LL. D., L. H. D., of Union University, read a paper entitled "The Old Schoolmaster," which proved to be the glowing tribute of respect of the speaker's ripened age, to the memory of his early and old-fashioned schoolmaster, Cyrus Comstock, who slept with his fathers half a century ago, in the northern part of this State.

President Chadbourne, of Williams College, and Professor Thomas A. Clarke, of the University of Louisiana, being present, were invited to occupy seats and participate in the discussions as honorary members.

The subject of Instructor Enos' paper on the Inter-collegiate Rhetorical Contest was called up, and Secretary Woolworth suggested the desirableness of such a contest for the colleges of this State, which, however, would properly be considered by the college section of the Convocation.

Principal Mattice suggested, that a similar contest might also be arranged for the academies.

Principal Cavert thought this would be going too far, as others might propose to widen the field to embrace public schools, etc.

Dr. Jewell, of Poughkeepsie, read a paper earnestly advocating the claims of the "Roman Orthoepy" as opposed to the English Latin pronunciation. He distinguished from the so-called "Continental Method," which is really five modes rather than one, and which all are at best only an approximation, following a better use of the vowel sounds than our English-Latin, but being equally incorrect and perverse as regards the Roman consonants.

He urged the Roman Orthoepy as resting upon sources of proof so varied, acute and ample as to be altogether extraordinary; more complete than any that can be adduced for much of the classic literature; more full and effective than could be found for the pronunciation of the French language were that language never to share the fate of the Latin; that proof is found in the writings of the ancient grammarians themselves; in ancient orthography, criticism, incidental remark and witticism; in the use of the letters employed in the case of words transferred from the Greek to the Latin, and *vice versa;* in the interchange of certain letters in the Roman alphabet; in the natural relations of certain letters and sounds; and in the phonetic preservation of the Roman sounds in Latin words still found in other languages, Syriac, Albanian, German, and even English. Giving a succinct statement of the Roman sounds, with brief reference to proofs on which they rest, he showed the advantages resulting from the use of that orthoepy, in being an honest effort at the truth, in restoring the truth and beauty of the Latin tongue, in adding new delight to its study, as well as in simplifying the study of its elements, and especially clearing up the chaos of English Latin Prosody, in making the study of Latin favor the acquirement of its cognates, the French, Spanish and Italian, and in promoting in the very beginning of the pupil's study of language, the direct culture of that finer vocal capability and power necessary even to the better pronunciation of our English tongue. He closed by showing the real grandeur of the Latin language, and the gross abuse to which it is subjected in our treatment of its orthoepy.

The paper was well received, and heartily indorsed by Professors Hamilton and Martin, Principal Thurber and Regent Hale, the entire voice of those taking part in the discussion which followed the reading of the paper, being in favor of a decisive effort on the part of the Convocation to further the claims and extend the use of the Roman orthoepy.

Dr. Hamilton, of Oswego, said he had been intensely interested in Professor Jewell's paper, and expressed the opinion that there is a growing feeling on the part of educators in favor of the Roman orthoepy. He adverted to the action of the Philological Convention, held at Poughkeepsie, some years ago, as favorable to this system.

Regent Hale said he had been greatly interested in the line of argument suggested by Professor Jewell. He had supposed the

great question to be: "What was the Roman Orthoepy?" Professor Jewell claims that the proofs can be furnished, and if so, let it be done, and the system put in practice.

Principal Thurber wished to contribute his mite of encouragement to this reform, and referred to his own experience and practice in the school-room as highly satisfactory.

Professor B. N. Martin, indorsing every word of Professor Jewell's paper, moved that the paper be printed at an early day for circulation through the State, which motion was referred to the Executive Committee.

Professor North announced that the Convocation will meet in college and academy sections at three and one-half o'clock (the former in the Senate Chamber), and in joint session at four o'clock.

Recess until 3:30.

Afternoon Session — Three and One-half o'Clock.

The first half hour was occupied by the College and Academy Sections, the former meeting in the Senate Chamber, Vice-Chancellor Benedict presiding, and the Academy Section in the Assembly Chamber, Regent Rankin presiding.

In joint session, the following resolutions, reported from the sections, were adopted, after considerable discussion:

From the College Section:

Resolved, That the professors of rhetoric in the literary colleges of this State be requested to act as a committee, with the Chancellor and Secretary of the Regents, to mature a plan for a Rhetorical Prize Contest, and to report the same to the Board of Regents, at the next anniversary of this Convocation.

Resolved, That a committee of seven be appointed to bring to the attention of the Regents a system of examinations by which the scholars who excel in any study taught in the colleges of this State may be classified and proclaimed by some public ceremonial under the auspices of the Regents, and report to the Convocation of 1875.

From the Academy Section:

Resolved, That a committee be appointed to make arrangements for an Inter-Academic rhetorical contest in this State, and report to the Convocation of 1875.

Principal John E. Bradley, of the Albany High School, presented a paper on the "Healthfulness of Intellectual Pursuits." He quoted from popular writers to show how prevalent is the impression that the mind has to be developed at the expense of the body. He argued that this could not be so, but that the wisdom of the Creator evi-

dently designed that mind and body should both be symmetrically developed at the same time. He showed how intimate is the connection between them; that what invigorates one strengthens the other, and that there can be no vital or physical force but as it comes from the mind. One important part of education consists in learning the structure of the body, how to care for it, and to promote its health. How much of the disease and physical suffering of humanity are the result of ignorance. Whatever liability there may be of overtaxing the brain in individual instances, it must be admitted that the popular diffusion of knowledge is an important safeguard to the public health. Moreover, physical vigor and power of endurance are directly increased by expanded and well-disciplined mental faculties, as the effectiveness of an engine is increased by adding more steam.

Consider what support and resources within itself a well-trained and disciplined mind possesses. Emerson says: "I never had a trouble or a sorrow which I could not forget in fifteen minutes in the perusal of some favorite author." In many instances it has proved true that a book was better than a medicine. A bright thought or a cheerful companion has often accomplished what anodynes could not do. A cultivated mind finds relief and support where another gnaws upon itself, and tortures its servant, the body. The historians of our war relate that young men brought up in the midst of the refinement of school and college, endured the hardships of the war, while their more rugged, but uncultivated comrades were broken down by disease.

A large amount of statistical matter was introduced, all tending to confirm the speaker's position. A prolongation of life during the last 200 years is evinced by German, English, and, to some extent, by American statistics. This increase of longevity is largely due to the diffusion of knowledge among the masses. Statistics show that men engaged in intellectual employments live longer than laboring men. The average length of life of college graduates is eight years more than the general average of the whole community. Individual instances of over-study of course occur, but they are the exception, not the rule. Intellectual work is healthy, worry is unhealthy.

Dr. T. S. Lambert, of New York, said that the paper just read is a very important one, as it calls attention to facts in regard to which there is much misapprehension, though in some regard it may be liable to criticism. It is a fact that the longevity of Americans is greater than that of Europeans; and there are more long-lived women than men in this country. Dr. Sievieking, of London, has proved by statistics in his recent work, that the above statements are true. Englishmen who come to this country, seeing the pale faces and the lank forms of our men and women, conclude that these features indicate the same constitutional conditions which they would in England. The cold and damp atmosphere of that country induces the blood to the surface and a floral complexion, and also the sub-cutaneous deposit of fat to preserve the heat of the body.

These characteristics are soon lost by those who come to our drier climate. Spareness is not indicative of ill-health, but if with it health persists, it is a more favorable indication than a greater development of fat. In New Hampshire, there are a greater proportion of very long-lived people, than in any other part of the world.

The descendants of Huguenots in the middle and westert part of North Carolina, are next in order; then Maine, Vermont, Connecticut, Massachusetts, Rhode Island, Pennsylvania, New York, New Jersey; while the other states, with local exceptions, fall in the rear — some of them so much in the rear as to be below the average mortality of Europe, and on the level with the worst parts of that country. These facts, with others, show that there is some other cause for longevity besides education; and, when thoroughly examined, indicate that the inherited constitution is the most essential factor, while locality and vocation are also very important factors.

The fact is that the ordinary method of compiling and using vital statistics is essentially vicious, from not taking into consideration the facts of inheritance. The writer of the paper to which we have just listened, has fallen into error in the same direction. He remarks that the Presidents of the United States have lived long, indicating that their education tended to promote their longevity, while the fact is that a person inherits a given longevity which cannot be lengthened, though it may be shortened. The presidents have each and all inherited longevity from long-lived ancestry.

The judges of the Supreme Courts of the United States and of the states were ascertained to be descended, without exception, from long-lived ancestry on both sides of the house. The same physical constitution which gives long life being essential for the existence of judicial or presidential (viz.: executive) characteristics — it follows that when the Massachusetts "vital statistics" make the judges to be the longest lived class of people, it is not because their vocation, *per se*, tends to longevity, but because they must have a tendency to longevity in order to be made judges; if chosen by lot from among the lawyers, their hard labors would induce a longevity below that of the average of lawyers.

For illustration: Suppose that our worthy Chancellor, sitting before us (though perhaps you will think the supposition an impossibility, as with his constitution and mental gifts indeed it would be); but suppose he had entered and prosecuted the vocation of a shoemaker, tailor, or other relatively "short-lived vocation," he would not have been short-lived; for with the inherited constitution with which he is blessed, derived from both sides of the house, he must have lived long — indeed, I have seen a man mending his own boots at 96; a brother of his working on the shoemaker's bench at 84, and another brother at 70 — yet this is not to be understood as a criticism of the general idea of this paper; for it is true that intellectual, as every other proper activity of each and every organ of the body does favor that longevity which is natural to the individual;

only it must be constantly remembered that the tolerance or measure of longevity is *individual*, and primarily dependent upon inheritance.

Also, it is true, that there is a greater average length of life now than formerly, and the proportion of long-lived people is certainly increasing. Among the ancient Romans and Greeks, a man of 80 was extraordinary. In one town in New Hampshire, of less than 1,000 inhabitants, there are 29 people over 90 years of age. Yet this extreme length of life of which the human being is capable, has not probably increased, nor can it probably be increased. No person has been *proved* to have lived in our modern centuries to the age of 104 years. That seems to be beyond the ultimatum of human capability.

I will advert to another remark, that "the children from our schools have a more healthy appearance than those coming from the factories." This can readily be accounted for from the fact that most factory children have short-lived parentage. It will be found that in the factory towns of New Hampshire, the average mortality is large, compared with that of the rest of the State. The native stock of New Hampshire is derived from those who immigrated to this country to serve God in accordance with their long-lived wills, and not for the purpose of improving their pecuniary condition (the same is true of the Huguenots, to whom reference has been made), while those imported to work in the mills have come to improve their pecuniary condition, and make worship and social condition secondary considerations. It is bad policy to encourage immigration of those whose short lives will make them and their families burdens upon the community, whom the long-lived must support by tax or charity, and whose inherited short-lived constitutions cannot be improved to any practical extent by education or any other means. Give long-lived constitutions, and apply education and other means of conserving their potential life, and you have the result which may exist in many parts of our country.

President Chadbourne urged that scholars should not spend too many hours in study. His own physical welfare in boyhood depended upon the fact that he lived where he could not attend school all the time.

Professor Potter, of Cornell University, said: One of the most important questions bearing upon general hygiene, and deserving of our attention as educational men, is that of a State Board of Health. The bill which unfortunately failed to pass the Legislature last winter, would have eventually secured those vital statistics necessary to any efficient hygienic labors for the benefit of the people at large. I desire to press upon the consideration of the Convocation the importance of a State Board of Health, and earnestly hope that every member on returning home, will call the attention of the people to this important question.

A paper, by Professor John L. Morris, C. E., of Cornell University, on "The Mechanic Arts in Theory and Practice," was read, in his absence, by Principal Branch, of Forestville.

Recess to 7:45 P. M.

Evening Session — Seven and One-half o'Clock.

Principal O. E. Branch, of the Forestville Free Academy, read a paper on "College Journalism," and Principal A. G. Benedict, of the Rome Free Academy, one entitled "Free Academy in a System of Graded Schools," (Vice-Chancellor Benedict in the chair).

Principal Benedict said, in substance:

The Free Academy is an existing, recognized fact, but against which are urged the

A. (1) Objections that this first step toward a higher education ought not to be free; (2) that the meagre results do not warrant the necessary expense.

B. Positive reasons for their existence: (1) It is a home institution. (2) It is *free*.

C. The Free Academy, with its necessary and suitable building, its appliances, library, cabinet, museum, art gallery, specimens, all are aids to general culture and diffusion of knowledge, which nothing else can supply; and the fact that they are free increases their active influence many fold.

Its course should be comprehensive, thorough, and arranged as far as possible for the wants of the community which it serves.

Secretary Woolworth, by direction of the Chancellor, made the following announcement:

At a meeting of the Regents of the University, held this day, it was unanimously

Resolved, That in consideration of distinguished attainments as a scholar, and eminent services as a teacher, the honorary degree of Doctor in Literature be conferred on Professor Charles Davies, LL. D.

At the same meeting, it was further

Resolved, That in consideration of his high position as a teacher in a sister State, and his scholarly attainments, the honorary degree of Doctor of Philosophy be conferred on Cecil F. P. Bancroft, A.M., Principal of Phillips Academy, Andover, Massachusetts; also, that in consideration of services in the cause of education, and eminent scholarship, the same degree be conferred on Daniel J. Pratt, A. M., assistant secretary of the University, and on Albert B. Watkins, A. M., Principal of the Hungerford Collegiate Institute; and that these degrees be conferred by the Chancellor in open Convocation.

The degrees were then conferred in due form by the Chancellor, the Secretary and Dr. Clarke presenting the candidates for the degree of Doctor of Philosophy, and the Secretary and Dr. Wilson the candidate for the degree of Doctor in Literature.

Principal White inquired whether any progress has been made in the matter of inaugurating a Teachers' Scientific Institute, under the resolution adopted at the last Convocation; to which the Chancellor replied that it has not been practicable, under existing circumstances, to carry the proposed plan into effect.

The Vice-Chancellor (presiding) stated, in view of his inability to attend longer than the present session, that he would take this opportunity to congratulate the Convocation on the large attendance, and the high character of the proceedings thus far, and to express his confident hope that the beneficent influence of this annual gathering will be still more apparent in the future.

The Convocation then adjourned, to meet in closing session to-morrow at 9:30 A. M., and the members repaired to the Chancellor's residence, in pursuance of the invitation given at the opening of the morning session.

The Chancellor appointed the following as members of the committte on the system of examinations proposed in the resolution adopted during the afternoon session:

Presidents Brown, of Hamilton, and Van Rensselaer, of Hobart Colleges; Warden Fairbairn, of St. Stephen's College; and Professors Martin, of University of city of New York; Wilson, of Cornell University; Comfort of Syrscuse University, and O'Leary, of Manhattan College.

The Convocation then adjourned, to meet in closing session to-morrow at 9:30 A. M., and the members repaired to the Chancellor's residence, in pursuance of the invitation given at the opening of the morning session.

THIRD DAY.

THURSDAY — NINE AND ONE-HALF O'CLOCK.

Rev. Dr. Fairbairn, Warden of St. Stephen's College, led in the usual devotional exercises.

Under the head of University Necrology, President Brown read a suitable tribute to the memory of Ex-president S. W. Fisher, D. D., LL. D., of Hamilton College. Biographical sketches were also furnished by Professor North, on the late Professors E. W. Evans, of Cornell University, and S. D. Wilcox, of Hamilton College; by Professor J. V. Lansing, on Dr. James McNaughton; by Professor D. S. Martin, on Professor Redfield, of the New York City Normal College, and by Principal L. D. Miller, on Principal William Fox, of Angola Union School. These, with others to be handed in at an early day, were referred to the Standing Committee on University Necrology, to arrange for publication.

The time to be allowed to the remaining papers on the programme was limited to twenty minutes each.

Professor George F. Comfort, Dean of the College of Fine Arts of the Syracuse University, read a paper upon "The Fine Arts as an Undergraduate Study." The following is an abstract:

A system of education, to be perfect, must be symmetrical, must cover all the attributes of human nature. Man is not a mental, moral and physical being, as is so often stated, but a physical and spiritual being. The spiritual part of his being resolves itself into three parts, the conscience, intellect and taste, whose fields of activity are religion and morals, science and art, abstract elements of which are classified by philosophers as "the good, the true, and the beautiful."

The education of the spirit must recognize these three elements. Moral education is provided for in America by churches and varied religious associations. It is also strengthened by instruction in our schools.

Education is science, using this word in its broadest sense, and is cared for extensively, though perhaps unequally, in our schools of all grades.

Education in the fine arts in America has been very poorly provided for. This is owing to our English origin, to our situation, isolated from the continent of Europe, and to the extraordinary opportunities which our country has afforded for the rapid accumulation of wealth. There would have been a great difference in the artistic condition of America to-day had but one per cent of the time which has been devoted to the study of the Latin and Greek languages, since the founding of Harvard College in 1636, been devoted to the study of the fine arts in our academies and colleges.

A wise general guards first the weakest point in his fortification; he does not give all his time to strengthening. So educators in America should give their chief attention, firstly, to strengthen the weakest and most neglected part of our system of education, which is most decidedly that part relating to æsthetic culture and artistic education.

The fine arts are the various modes of expressing the beautiful, in human productions. They are classified under two heads: The formative arts, appealing to the eye, including architecture, sculpture, painting, and the various forms of industrial art; and the sounding arts, appealing to the ear, including music, oratory, poetry and *belles lettres* literature.

These arts are not wholly neglected in American education. Oratory is cultivated more extensively than in any country in Europe. A good deal of attention is given to rhetoric, the foundation of poetry and *belles lettres* literature. Music is taught to a limited extent in our schools. But the formative arts are greatly neglected.

A general esthetic culture is of the greatest importance in a nation. Without it, there can be no true artistic development in the nation. This culture must be secured in our schools. The fine arts must be taught in all the grades of schools, preceding the professional schools, as in the primary schools, academies and colleges. Drawing, the basis of all the formative arts, must be taught as a required study. It should be placed among the studies which are required in admission to college. It should be taught, in its various branches, for as much as four hours a week, during at least one collegiate year.

The science of Esthetics should be taught during one or more terms. The history of the arts should be taught for as long a time. These studies should be illustrated by photographs, engravings and casts of the chief monumental works of architecture, sculpture, painting and industry.

This is nothing new in education. It is practiced in all the schools of Germany, France, Belgium, Switzerland, Denmark, Sweden and many other countries in Europe. It was practiced in Greece, and hence the extraordinary development of the fine arts and esthetic culture in Greece.

It is of the utmost importance, however, that we should immediately redeem the time that has been lost, and bring our system of education in harmony with the wants of all the faculties of the human spirit, and in accordance with the general character of the systems of education that prevail in the chief civilized countries of Europe.

Principal E. W. Rogers, of the Bainbridge Union School, presented a paper on "Map Drawing, with Blackboard Illustrations." These illustrations were given by his son, a pupil in his school, in a very rapid, accurate and elegant manner. Principal R. said:

How shall I teach geography, or what course shall I pursue in order that I may make the study interesting? I might inquire of this honorable body how I shall make the study of map drawing interesting in the brief space of twenty minutes? We need appar-

atus for the school room if we would succeed in giving instruction in many of the branches taught. The globe is essential, I may say *indispensable*, to the giving of correct ideas of the form and condition of the earth to the child. It should not be locked up in the *laboratory*, but should be in daily use. Maps are also necessary, and instead of being rolled up and hung upon the wall, should be unfurled, and the scholar should be taught the situation of one part of the country with respect to the other portions. But while I yield the globe and outline maps their proper place and due importance in the study, I fully believe that map drawing is of more importance than all other means. In order that a school may be properly taught *map drawing*, it is necessary that the class room be provided with a large amount of blackboard surface. In this respect, I am aware that many teachers find their "hands tied," as so many of our school buildings are either not supplied at all, or but poorly supplied with blackboards. I am glad to be able to state that such is not the case with the academy I represent. In our instruction we are, I fear, too apt to be more theoretical than practical. Our normal classes are far from being as conversant with this subject as they should be to fit them to take care of our public schools. I desire to take you for a few moments (in imagination) into my own school room, and, in order to do so, I will call my son, W. Leon Rogers, and give him the directions for drawing the map of South America, the same as I would give a class of one hundred pupils. He must represent a class of from one to two hundred pupils, and he must be considered as occupying five different rooms, three of which are under my direct supervision, while in the other two the work is performed by an assistant teacher. Each scholar is supplied with a ruler two feet in length. At the proper signal, they arise and march to the blackboard, where the proper directions for the work are given, as:

Dot No. 1 — N. W. corner.
" " 2 — 3,200 miles E. of No. 1.
" " 3 — 4,500 " S. " 1.
" " 4 — 3,200 " E. " 3.

You will please remember that the distances are all given in miles, so that, when the pupil has once become familiar with and can readily draw the map of any country or political division, he is also familiar with its relative size, as compared with other divisions, thus obviating the necessity of any change from the present to a uniform scale of maps for all countries.

[Here followed the blackboard illustration, resulting in the production of a complete and beautiful outline map of South America.]

Professor James Hall, LL. D., made a statement in regard to the "Anderson School, at Penikese Island," closing with a suggestion that the Regents of the University take measures to secure the advantages of a conditional arrangement for the continuous instruction of two scholars from this State.

Principal Henry W. Siglar, of the Newburgh Classical School, read a paper on "Analysis and Composition by the use of Symbols." The following is an abstract:

This method of teaching language, to which I invite your attention, is the result of a determined effort to discover some way of overcoming the difficulties of teaching English. The prominent feature of the plan, consists in the use of symbols to represent the usual parsing and analysis of sentences. These symbols form a language of their own, which may be employed in a reverse exercise, the actual composition of English sentences. It is emphatically a school-room product. It has been made to order, that is, the author has first taken the measure of his pupils and then cut and made accordingly. The pupil is first taught to distinguish words that are the names of things. These he calls *nouns*. He is next taught that some nouns are names that apply to a large number of things, and that others are names of particular objects. Nouns are further classified by means of the distinctions of gender and number. For convenience, person is now omitted. Case is next considered, but the Possessive is the only one of the three treated of in connection with nouns. Pronouns follow the subject of case, and their inflection is taught and enforced by copious exercises, both analytical and synthetic: Analytical, in requiring the pupil to describe words by the use of symbols; synthetical in requiring him to write words from symbols. Adjectives, prepositions and demonstratives follow in the formation of exercises on all kinds of phrases. Sentences are now introduced, the words composing the subject are inclosed in parentheses, the predicate in brackets, and the object of the predicate verb in braces. In the construction of exercises, the irregular verbs are used from this point. By means of exercises made up of simple sentences to be rendered into the language of symbols, and symbols from which the pupil is required to compose simple sentences, the moods and tenses are illustrated and their proper use taught. Compound and complex sentences compose the rest of the scheme. The whole plan embraces a course of written and oral exercises extending over two years, and is designed to meet the requirements of pupils from ten to fourteen years of age.

Professor T. S. Lambert, M. D., LL. D., of the Claverack Academy and Hudson River Institute, presented a paper entitled "New Scheme of the Functions of the Human Body."

The committee on "School Supervision," announced yesterday morning, reported a series of resolutions, which led to much discussion and various amendatory motions; whereupon, Dr. North, Chairman of the Executive Committee, submitted the following resolution in lieu of various others offered, which was unanimously adopted:

Resolved, That a committee of seven be appointed, including the Chancellor of the Board of Regents and the Superintendent of

Public Instruction, to confer with other educational associations and authorities of the State, and to represent this Convocation in all efforts that are made for unifying the system of education in the State of New York.

The Chancellor announced the committee on the subject of the proposed Inter-Academic Rhetorical Contest as follows:

Principals Alonzo Flack, Claverack; John E. Bradley, Albany; James S. Gardner, Whitestown; Albert B. Watkins, Adams; Noah T. Clarke, Canandaigua; Levi D. Miller, Bath; Winfield S. Smyth, Cazenovia.

President Allen, as Chairman of the Committee of Fifteen, appointed two years since and continued last year, made a brief oral report as to what they have done and failed to do, and the same committee was continued for the ensuing year, the Chancellor being authorized to fill any vacancies in their number.

Regent Wetmore announced that, if permitted to be present at the next meeting of the Convocation, he will make a final report on the "Roll of Honor."

Warden Fairbairn moved that the Executive Committee be requested to provide during future anniversaries for afternoon Sectional meetings, which motion was referred to the Executive Committee.

On motion of the Chairman of the Executive Committee, the following resolution was unanimously adopted (Regent Hale in the Chair):

Resolved, That we place on record our hearty thanks to Chancellor Pruyn, Secretary Woolworth, and Assistant Secretary Pratt, for their unwearied efforts to promote the noble aims of this Convocation, with a special expression of gratitude to our honored Chancellor for the elegant, classic, and most enjoyable reception with which he has relieved the tedium of our daily Convocation work, and made each of our eleven anniversaries a beautiful and delightful memory.

The Chancellor acknowledged this complimentary resolution, in behalf of the secretaries and himself, adding that whatever has been done in this direction has been with the most hearty interest in the work, and, so far as he was concerned, he was sincerely thankful to the Convocation that the members, by their presence and co-operation in this good cause, have given him the opportunity to make their stay in the city agreeable.

Professor Comfort remarked, that he had intended to add a few words in his paper, had time permitted, with reference to the delightful entertainment which the members of the Convocation had enjoyed. In viewing the many works of high art, with which

the Chancellor's residence is adorned, especially was it a pleasure to view the fine painting by the distinguished Lombard Luini, the only original work by this artist in America, and the painting by Perugino, the only work, perhaps, but one, by that artist in America.

In his own practice, the Chancellor exemplifies the highly cultivated gentleman, the art lover and connoisseur. The great need in America is a large body of gentlemen of such culture, to elevate the artistic feeling in our society, and help prepare the way for the inauguration of a brilliant school of national art.

On motion of Professor Hall, it was

Resolved, That a committee be appointed to memorialize the Legislature, to provide the means of educating two teachers annually in natural history, at the Anderson School, on Penikese Island.

The Chancellor subsequently appointed Drs. James Hall, Jonathan Allen and Noah T. Clarke as such committee.

The Chancellor announced as the Executive Committee for next year:

Professor Edward North, L. H. D., Hamilton College, Clinton.

Professor George F. Comfort, A. M., Syracuse University.

Professor Leroy C. Cooley, Ph. D., State Normal School, Albany.

Principal Homer B. Sprague, A. M., Adelphi Academy, Brooklyn.

Principal Samuel Thurber, A. M., Syracuse High School.

Superintendent Levi S. Packard, A. M., Saratoga Springs.

Principal John W. O'Brien, A. B., Griffith Institute, Springville.

The Standing Committee on University Necrology was continued without change, viz.:

Secretary Samuel B. Woolworth, LL. D., Albany.

Professor Edward North, L. H. D., Hamilton College, Clinton.

Professor Daniel S. Martin, Rutgers Female College, New York City.

Professor D. S. Martin called attention to a circular announcement of the "Centennial of Chemistry," to occur at Northumberland, Pa., where Priestley lies entombed, on the 31st of July, inst., and suggested that any present here who are to attend the State Teachers' Association at Binghamton, and the field meeting at Scranton, Pa., can readily attend this Centennial.

Chancellor Pruyn made a brief address, closing with an expression of thanks to the members for their presence and earnest co-operation, and wishing them a providential safe return to their homes.

The Convocation then adjourned to meet on the first Tuesday of July, 1875, and the benediction was pronounced by Rev. Dr. Wilson.

REGISTERED MEMBERS OF THE CONVOCATION.

1874.

BOARD OF REGENTS.

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Chancellor of the University..... Albany.
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DANIEL J. PRATT, Ph. D., *Assistant Secretary*.... Albany.

COLLEGES, ETC.

Columbia College — Professor Charles Davies, LL. D., L. H. D.

Union University — Professor Tayler Lewis, LL. D., L. H. D.; Professor Ransom B. Welch, D. D., LL. D.

Hamilton College — President Samuel G. Brown, D. D., LL. D.; Professor Charles Avery, LL. D.; Professor Edward North, L. H. D.; Professor John W. Mears, D. D.

Hobart College — President Maunsell Van Rensselaer, D. D.; Professor Charles D. Vail.

University of the City of New York — Professor Benjamin N. Martin, D. D., L. H. D.

Alfred University — President Jonathan Allen, Ph. D.; Professor Ida F. Kenyon, A. M.

St. Stephen's College — Warden Robert B. Fairbairn, D. D.

Cornell University — Professor William D. Wilson, D. D., LL. D., L. H. D.; Professors Z. H. Potter, M. D.; John Stanton Gould.

Manhattan College — Prof. C. M. O'Leary, M. D., Ph. D.

College of the City of New York — Professor Gerardus B. Docharty, LL. D.; Professor Adolph Werner, M. S.; Professor Jesse A. Spencer, LL. D.; Tutor Eustace W. Fisher.

Rutgers Female College — Professor Daniel S. Martin.

Syracuse University — Professor George F. Comfort; Trustee Charles P. Easton.

Union University (Albany Medical College Department) — Professor John V. Lansing.

New York Medical College and Hospital for Women — Trustee Mrs. D. E. Sackett.

Williams College, Mass. — President Paul A. Chadbourne, LL. D.

University of Louisiana — Professor Thomas A. Clarke.

State Normal School — Professor Leroy C. Cooley, Ph. D.; Instructress Kate Stoneman.

Fredonia Normal and Training School — Professor Oscár R. Burchard.

Department of Public Instruction — Superintendent Neil Gilmour; Deputy Superintendent Edward Danforth; James C. Brown.

New York State Library — Librarians Henry A. Homes, LL.D., and Stephen B. Griswold; Assistant Librarian George R. Howell.

New York State Museum of Natural History — Director James Hall, LL. D.; Entomologist J. A. Lintner.

New York State Teachers' Association — President Andrew McMillan; Corresponding Secretary James Cruikshank, LL. D.; Ex-President James B. Thomson, LL. D.

State Board of Charities — Secretary Charles S. Hoyt.

State Board of Medical Examiners — Horace M. Paine, M. D.; Prof. O'Leary.

ACADEMIES, ETC.

Adelphi Academy — Principal Homer B. Sprague; Mrs. Sprague.

Albany Academy — Trustee Orlando Meads.

Albany Female Academy — Principal Louisa Ostrom.

Albany High School — Principal John E. Bradley; Instructor O. D. Robinson.

Albany Public Schools — Superintendent John O. Cole; Principals James L. Bothwell and E. H. Torrey.

Alfred University, Academ. Dept.— President Jonathan Allen, Ph. D.; Mrs. Ida F. Kenyon.

Amsterdam Academy — Principal Wm. B. Sims, M. D.

Bainbridge Union School, Academ. Dept.— Principal E. W. Rogers; Mrs. Rogers; W. Leon Rogers; D. A. Gilbert, Sec'y of Board of Education.

Baldwinsville Free Academy — Principal A. E. Lasher.

Binghamton Central High School.— Principal E. S. Frisbee.

Brooklyn Collegiate and Polytechnic Institute — Instructor Edgar A. Enos.

Canandaigua Academy — Principal Noah T. Clarke, Ph. D.

Canastota Union School, Academ. Dept.— Principal Aaron White.

Candor Union School, Academ. Dept.— Ex.-Principal L D. Vose.

Cayuga Lake Academy — Principal Charles Kelsey; Mrs. Kelsey.

Claverack Academy and H. R. Institute — Principal Alonzo Flack, Ph. D.; Instructor William McAfee; Instructor T. S. Lambert, M. D., LL. D.

Colgate Academy — Instructor Eugene P. Sisson.

Davenport (Iowa) Grammar School — Instructor G. W. Heywood.

Delaware Literary Institute — Principal George W. Briggs; Vice-Principal John M. Chase.

East Greenbush Collegiate Institute — Principal I. G. Ogden.

Egberts High School — Principal Oliver P. Steves.

Elizabethtown Union School, Academ. Dept.— Principal John W. Chandler.

Falley Seminary — Principal James Gilmour; Instructor W. S. Hall.

Forestville Free Academy — Principal Oliver E. Branch.

Fort Edward Collegiate Institute — Principal Joseph E. King, D. D., Ph. D.

Fort Plain Seminary and Female Collegiate Institute — Principal A. Mattice.

Geneseo Public Schools — Instructress Alice Burritt.

Gouverneur Wesleyan Seminary — Principal M. H. Fitts.

Green Island Free School — Mrs. Catharine Molony.

Griffith Institute — Principal John W. O'Brien.

Hamburgh Union School, Academ. Dept.— Principal Anderson R. Wightman.

Hartwick Seminary — Principal James Pitcher.

Haverling Union School, Academ. Dept.— Principal Levi D. Miller.

Hudson Vale Institute, Lansingburgh — Principal Alden B. Whipple.

Hungerford Collegiate Institute — Principal Albert B. Watkins, Ph. D.; Instructor R. S. Bosworth.

Johnstown Union School, Academ. Dept.— Principal W. S. Snyder.

Jordan Academy — Principal Wm. Harkins.

Lansingburgh Academy — Principal Charles T. R. Smith; Preceptress E. S. Winter.

Liberty Normal Institute — Principal M. B. Hall.

Lyons Union School — Principal Timothy H. Roberts; Mrs. Roberts.

Monticello Academy — Principal Francis G. Snook.

Morris Union School, Academ. Dept.— Principal C. J. Majory.

Munro Collegiate Institute — John Rice, President of Trustees.

Newark Union School and Academy — Principal A. W. Norton.

New Berlin Academy — Principal James M. Sprague.

Newburgh Classical School — Principal Henry W. Siglar.

Nichols Union School, Academ. Dept.— George M. Cady, President of Board of Education.

Norwich Academy — Principal Hiram L. Ward.

Oswego Boys' English and Classical School — Principal Emerson J. Hamilton, Ph. D.

Owego Free Academy — Trustee Wm. Smyth.

Peekskill Academy — Principal Robert Donald.

Phillips Academy, Andover, Mass. — Principal C. F. P. Bancroft, Ph. D.

Poughkeepsie High School — Principal Frederick S. Jewell, Ph. D.

Pulaski Academy — Principal Sebastian Duffy.

Rhinebeck Union School, Academ. Dept.— Principal Michael P. Cavert.

Rome Academy — Principal A. G. Benedict.

Sandy Hill Union School, Academ. Dept.— Principal William McLaren; Preceptress Frances A. Tefft.

Saratoga Springs Union School, Academ. Dept.— Superintendent L. S. Packard; Trustee Wm. M. Searing.

Skaneateles Union School, Academ. Dept.— Principal William C. Bowen.

Sodus Academy — Principal Elisha Curtiss.

S. S. Seward Institute, Female Dept.— Principal Mrs. George W. Seward.

Syracuse High School — Principal Samuel Thurber.

Troy Academy — Principal T. Newton Willson.

Troy High School — Superintendent David Beattie.

Utica Free Academy — Superintendent Andrew McMillan.

Walton Union School, Academ. Dept.— Instructress Martha Hay.

Warsaw Union School, Academ. Dept.— Principal S. M. Dodge; Mrs. Dodge.

Watertown High School — Principal W. K. Wickes.

Waterville Union School, Academ. Dept.— Principal George R. Cutting.

West Winfield Academy — Principal A. K. Goodier.

Whitestown Seminary — Principal J. S. Gardner, Ph. D.; Instructor William L. Dowling.

Alfred B. Street, Albany.
Rev. John James, D. D., Albany.
Wm. H. Hale, Ph. D., Albany.
Emily Bailey, Albany.
John S. Hayes, Boston, Mass.
Chas. A. O'Reilly, Brooklyn.
Taylor Lewis, Jr., Schenectady.
Ezra B. Knapp, Skaneateles.
C. W. Bardeen, Syracuse.
Wm. P. Rudd, New York *Tribune*.

THE MODERN THEORY OF FORCES.

By Professor Ransom B. Welch, D. D., LL. D.,
of Union University.

Something is; therefore, something has always been. This is an enthymeme valid for all reasoning upon the problem of existence. None, we feel assured, will question this validity, unless it be the microscopic number of doubters who distrust all reasoning and deny all reality; but, as this class doubt the reality of their own doubts, they are self-silenced, and by their own confession ruled out of this discussion.

But *what* is? Whether matter alone, or mind? or, whether both are? What is matter? And what is mind? Whether they are identical or diverse? Whether they are inter-dependent or independent? Which, if either, is antecedent, and which, consequent? What, in fine, are their relations to each other and to the system of things? And, how do these relations affect the problems of existence, of social life, of morality, and of religion? These are the old, old questions, never put to final rest by past answers, but ever returning to challenge the thoughtful consideration and conscious solution of the coming age — never more clamorous than at the present; and never, perhaps, receiving more clamorous answer. Among the respondents, a school of scientists appears with *The Modern Theory of Forces*, as affording the most satisfactory solution. The *theory of force* is as old as the process of speculation; but, the *theory of forces*, as applied to these questions, is not only modern, but even recent. It proposes, not only to explain the phenomena of nature, but to solve the problem of being — to tell us *what* is, and *how* it is; what is *primitive* and what *derivative; where* the process of derivation began, and *how*, and *how it proceeds*, including within its range not only matter and mind, but problems of social life, and liberty, and morality, and religion. Wide as is this range it is to be penetrated everywhere by the light of science, which is to guide the explorer, in every direction, to the desired solution. To give the better assurance, science claims, in this high office, to be positive; discards

assumption, and employs only demonstration; shuns the *a priori* process, and pursues the path of induction. The canon claimed as regulative — at least, theoretically regulative — is: "In positive science, nothing can be assumed." Winslow's *Force and Nature*, p. 7.

Science has effected so much since the time of Lord Bacon, and especially within the present century, as to deserve our grateful acknowledgment, and to challenge respectful attention to its maturer utterances. It is quite unnecessary for me, in this presence, to enumerate its material triumphs as applied science. It is rather its researches into the mysteries of nature, and its later generalizations, of which I would remind myself and you. In this most difficult, but most important direction, have the representatives of science displayed skill, industry and self-sacrifice worthy of the high success achieved, and worthy of universal praise. Rumford, Grove, Mayer, Joule and others have, by observation and experiment, ascertained the convertibility of heat, light, electricity, magnetism, chemical affinity, etc. Hence, has been deduced the principle of the correlation of forces. As these forces are only transmuted, not destroyed by this correlation, another principle has been deduced — the Conservation of Energy, or, the Indestructibility of Force. Indestructibility relates to the quantity of force; convertibility relates to the quality of force. From this conclusion, a more recent advance has been made, applying the doctrine concerning physical forces to vitality and mental action, declaring that not only life, but even thought, is correlated to the physical forces. Here we reach the Modern Theory of Forces — a theory in which science, philosophy and religion, are mutually interested.

It is well to remember that a subject of so great interest, and of so wide a range, demands dispassionate examination. We may not reject a theory merely because it seems paradoxical, nor adopt it merely because it is novel. That is the inconsistency of a bigot; this, the inconsistency of an enthusiast. Yet it is obvious to remark that the new scientific enthusiasm awakened by new instruments, new experiments, and new discoveries has become so stimulating that dogmatizing, once decried as the monopoly of theologians, has been adopted and made a pet of modern science. Its tyranny has extorted, even from an ardent advocate of the modern theory of forces, this significant taunt: "In this case, the men of science might even take a lesson from the clergy." Bray's Manual, etc., p. 318. These diverse dogmatists, who cannot all be right, should remember

the prudent confession of Tyndall: "The logical feebleness of science is not sufficiently borne in mind." "I am exceedingly adverse," says Faraday, "to the easy and unconsidered admission of one supposition upon another, suggested as they often are by very imperfect induction from a small number of facts, or by a very imperfect observation of the facts themselves."

For ourselves, we are ready to admit that there is a theory of forces which is both ultimate and unquestionable; that there is an equivalence and a correlation of forces which the world has been only too slow to recognize; that the conservation of force is a principle which science may well maintain; that persistence of force, if properly explained, must commend itself to universal acceptance; and, that the doctrine of evolution, if relieved of absurdities, is valid. But this conclusion turns, mainly upon our conception of forces and the scope of their correlation; while it involves the essential question, *whether life and mind are forces* — a question which runs through the entire discussion.

It will be remembered that Prof. Grove, who was among the first to introduce the terms correlation and conservation, speaks of forces as related to matter, and the correlation of forces as confined within the range of material nature. Faraday, who regarded the conservation and correlation of forces as the highest law hitherto discovered in physics, also employed the term force as related to matter, and applied correlation and conservation of forces within the range of material nature.

We are ready, not only to accept, but to maintain this view of the correlation and conservation of forces as presented by Grove and Faraday and other earlier advocates of the theory of forces. But within the last decade of years, the notion of force has been extended far beyond the realm of matter. The general principle is correct, viz.: Correlation and conservation; yet, the modern theory of forces, amplified as it is, and diverse and contradictory, as we shall see, shows how immature are many of the notions on this subject, and how easy it is, in the enthusiasm of scientific observation and experiment, to glide into error in applying the general principle.

In the light of its own definitions, we will first examine this theory. While these definitions should be clear, they should not be contradictory, nor should they be ambiguous, thus allowing an illicit process to creep in and vitiate the conclusions. They should mark, at once, the precise and permanent limit to the application of the theory. It is preposterous to talk of the correlation of forces without a clear conception of what force is. It is more preposterous

still to talk of forces as affections of matter, and yet have no clear conception of force or of matter—whether matter is force, as many affirm, and whether mind, as some affirm, is the most highly concentrated force. In the slightest hazard, we cannot submit to guidance which does not know its own way. *A fortiori*, we cannot commit ourselves to unwitting guidance when the very nature of matter and mind is involved, when our own origin and destiny, the very origin and destiny of thought and being are involved.

According to Prof. Grove, force, though so subtle as to elude the senses, is real and causal—the producer or cause of motion. (Passim.) While this definition may apply in dynamics, it is evidently inadequate in statics as Mr. Grove himself admits "in the case of equilibrium of the two arms of a balance;" and so, we may add, in every case of statics where balanced forces of indefinite degree may produce static repose in any degree.

Dr. Mayer, of Heilbronn, in his paper on "The Forces of Inorganic Nature," says, p. 251: "The term force conveys the idea of something unknown and hypothetical." On the other hand he tells us, p. 252, that "forces are indestructible, convertible, imponderable objects." As if appreciating the vague employment of the term, he remarks that "an attempt to render the notion of force equally exact with that of matter is one which, with the consequences that flow from it, ought not to be unwelcome to those who desire that their views of nature be clear and unincumbered with hypotheses." Dr. Mayer's definition is: "Forces are causes," to which he applies the rule, *causa aequat effectum*. But as this might include all causes, he restricts the term forces to imponderables, strangely but carefully excluding from his definition such causes as have weight and impenetrability.

Dr. Bray in his "Anthropology," etc, p. 164, having before his eyes no such fear as disturbs Dr. Mayer, declares with scientific enthusiasm, "Force is every thing." And, doubtless to be more explicit, he says on p. 220: "It is a noumenal integer phenomenally differentiated into the glittering universe of things." From this dazzling definition it is a relief to turn to the milder utterance of Faraday: "What I mean by the word force is the cause of a physical action." As this restricts the effect to the limit of physics, so it would seem to restrict the cause.

Dr. Bastian in his labored work on "Force and Matter," I. p. 4, explains force to be a *mode of motion*, differing again from all that precede him in regarding force as neither effect nor cause, but the *mode of an effect*.

Herbert Spencer,—"First Princs." p. 266—says: "Force as we know it can be regarded only as a certain conditioned effect of the unconditioned cause, as the relative reality, indicating to us an absolute reality by which it is immediately produced." And Prof. Barker, as if deliberately to increase the confusion, says in a lecture devoted to the elucidation of this subject (p. 7), "By actual energy (or force) as contradistinguished from potential is meant motion. It is in this sense that we shall use the word force in this lecture."

This is a sample of the definition of force which could be greatly extended. And yet under threat of censure from this school of "more advanced thinkers," as Prof. Barker styles them, we are required to adopt their theory of forces.

By what mental feat this is to be accomplished, they do not inform us. As a process of fiction it might be allowable to make the attempt. But we submit that it is quite unscientific seriously to impose such a task. We firmly believe that electricity and magnetism are convertible; that heat and light are correlated; that affinity, cohesion, gravity—any or all of these, however changed or interchanged, are undestroyed—more than this, are indestructible.

But we confess an utter inadequacy to adopt definitions so diverse and discordant. Indeed, we cannot avoid suspecting the soundness of a theory built upon such an unsound and refractory foundation. From these confused and contradictory definitions of force, we turn to the view of matter, as presented by this modern theory. Does it distinguish or identify matter and force?

As we have already seen, Mr. Grove says: "Forces are the affections of matter," thus distinguishing between the two; while Faraday declares: Matter is force," thus identifying the two. This decision Faraday reached, as we learn from his "Life and Letters," after the maturer experience of a life spent in scientific observation, pushing his analysis to the ultimate conclusion that the atoms of matter are "centers of force."

Winslow, p. 70, says: "Matter is of itself a mere vehicle. Its fundamental nature is to possess and hold force as a bladder holds water, a sack, meal." While Balfour Stewart asserts: (in his very recent work on "The Conservation of Energy," p. 133), "Matter is essentially dynamic."

Bastian, one of the most radical supporters of The Modern Theory of Forces, says: "Forces are the qualities of matter;" while Bray, no less radical than Bastian, says: "Matter is force;" and Pop. Spiller, in his "Kosmische Kraft," published 1873, (See Pop. Sci. Monthly, Jan. 1874, p. 351) asserts that "no material constituent

of a body, no atom is in itself originally endowed with force, but that every such atom is absolutely dead, and without any inherent power to act at a distance;" and while he fundamentally distinguishes matter and force, he goes on to show that force is an *Entity* having an existence substantial and independent of matter; while on the other hand Prof. Youmans, who will be recognized as a somewhat active adherent of the modern theory of forces, says, "Correlation and Conservation of Forces," p. 31: "As we know nothing of matter, except through its manifestation of forces, it is obvious that the study of matter itself is at last resolved into the study of forces." As willing to extend the scope of the theory as he has been active in promoting its establishment, Prof. Youmans (p. 12) significantly declares: "Scientific inquiries are becoming less and less questions of matter, and are more and more questions of force. Material ideas are giving place to dynamical ideas. Instead of imponderable elements we have an order of purely immaterial forces."

And among the latest utterances in the same direction Prof. Stallo in "The Popular Science Monthly," Jan. 1874, p. 350, condemns both the hypothesis of material (corpuscular) atoms as advocated by Spiller and others, and the hypothesis of "centers of force," as advocated by Faraday and others,—and to complete the confusion both in regard to force and matter, affirms that "there is no force without matter, and no matter without force, but that neither of these elements has any reality as such."

Again we confess our inadequacy to adopt these contradictory definitions, as well as our growing suspicion of a theory built upon such a foundation.

Like discord prevails in regard to life. "What is its origin," Prof. Tiedemann declares, "is beyond the range of experiment." Dr. Meissner, who informs us that he has "succeeded in directly producing life in inanimate bodies" and therefore ought to know, says: "Life is but motion." We had supposed it neither difficult nor uncommon to transmit motion to inanimate bodies. But this error Dr. Meissner would promptly correct by the oracular announcement that "motion is an actual tangible substance." Herbert Spencer defines life as "the continuous adjustment of internal relations to external relations." Prof. Owen says: "Life is a sound expressing the sum of living phenomena." "Life," says Schelling (and Burdach), "is the tendency to individuation." Dr. Bastian declares life to be "the result of molecular combination," and together with his coterie vociferously teaches Archebiosis—the old

theory of Needham and Redi, and older still of Ovid and Lucretius, that "living things can take origin from non-living materials!" While another coterie as vociferously deny Archebiosis and teach Panspermism — the theory of Spallanzani and Bonnet, etc., "that the atmosphere bears with it everywhere the germs of infusorial animalcules and of other organic forms," from which generation proceeds—generation apparently but not really spontaneous.

Now, we are arrested by the advocacy of Epigenesis, with the rallying cry from its supporters: "Omne vivum ex ovo," with an occasional modification: "Omne vivum ex vivo." Anon the adverse claims of Heterogenesis gain the ascendent. And now Homogenesis increases the confusion. Discord becomes contagious, "as the scientific coteries concentrate upon their favorite and diverse issues, biosis and archebiosis, spontaneity and heredity, homogenesis and heterogenesis, and epigenesis, and pangenesis.

Dr. Bastian concluded, that he had produced "truly organized plants and small ciliated infusoria" out of inorganic matter; but Schultze and Dalle claimed to correct the hasty conclusion by their failure to vitalize lifeless matter, organic or inorganic.

Dr. Bray, one of the most advanced of "the more advanced thinkers," says, "Life, so far as we yet know, proceeds only from life;" while Mr. Crosse, it will be remembered by the readers of "The Vestiges of Creation," Mr. Crosse, by a solution of silex in water, created the late lamented insect so precocious, that it promptly became a shining mark for death, but which, during its brief and brilliant life, received the name of its fond creator, Acarus Crossii—the first, alas, the only one, we believe, of his spontaneous offspring!

On the one hand are arrayed "the advanced thinkers" from Lamarck and Burdach to Bastian and Pouchet. On the other hand are arrayed "the advanced thinkers," from Schwann and Schultze to Pasteur and Duthiers.

But this discord in regard to life is aggravated by the special disagreement of what were deemed friends in the larger strife. Even Pouchet cannot agree with Bastian, nor Burdach with Lamarck.

Pineau (in 1845), as he tells us, actually watched, step by step, the heterogenetic origin and development of one microscopic fungus—the Penicilium glaucum, and of two infusoria—a vorticella and a Monas lens!!!; while the materialistic Büchner says of life: "The final results are separated from the original causes by such a number of intermediate links that their connection is not easily

established;" and Prof. Huxley declares: "Constructive chemistry could do nothing without the influence of pre-existing living protoplasm."

But not to extend these references, it is under the cover of such indefiniteness that an illicit process has crept in, which would forsooth, clandestinely commit us all, and all things to an ill-defined theory of the correlation and conservation of forces. It is under the cover of such indefiniteness of terms that so many vagrant and diverse theorizers can be classified as members of this modern school of scientists. Precision would greatly check the enthusiasm of their support and the ardor of their mutual admiration.

This indefiniteness and consequent confusion would be comparatively harmless and insignificant, like the play at blind-man's-buff, did it concern only the players. While this theory confined itself to the material field if not helpful it was, at least, not harmful. Although it could not agree upon a definition of force nor of matter nor of forces, now distinguishing and now identifying that which it had just distinguished, and so plunging itself and those who relied upon it into inextricable confusion, yet the speculative and the practical thinker remained unaffected — accepting the conclusions of this theory and disregarding its verbal contradictions, as hitherto so now, applying forces freely and converting them into each other as occasion demanded and circumstances favored. But overstepping this, its just limit, and applying its hypotheses to life and thought, this modern theory of forces, by its rough play of confused definitions and eager generalizations and scientific dogmatizing, can but work mischief; for, though it cannot tell what force is, nor what is matter, nor what are forces, yet it declares that vitality and thought, life and mind, are the same as matter — are forces the same in kind as physical forces — correlating thought with heat, choice with the turning of a corkscrew, and life with the sweep of a lever,— correlating human morality with material mechanism, freedom with fate, moral government with material necessity — in a word, making life and mind material, the same in kind as a stock or a stone, imperiling at once moral government, human responsibility, and individual freedom! Such is the scope of the theory logically implied and openly avowed. That I do not overstate this, a few references will abundantly prove.

Dr. Maudsley in his "Physiology and Pathology of the Mind" styles mind "the highest development of force," where it appears in its most compressed form as consciousness.

Dr. Hammond in his "Physics and Physiology of Spiritualism" says: "Mind is a force, the result of nervous action."

Dr. Bray in his "Manual of Anthropology," p. 28, says concisely "Mind is force." In the same category he places heat, light, electricity, chemical affinity, life, and mind, as forces known to us only in their modes of motion; and characterizes "heat as the most diffuse, and mind as the most condensed form of force." "Therefore Mental Philosophy," he says, "is a pure system of dynamics or measuring of forces." p. 5.

Carl Vogt, courageously pressing the modern theory of forces to its logical materialistic limit, asserts that thought is a secretion of the brain; that "just as the liver secretes bile, so the brain secretes thought."

Herbert Spencer says: "Those modes of the unknowable which we call motion, heat, light, chemical affinity, etc., are alike transformable into each other, and into those modes of the unknowable which we distinguish as sensation, emotion, thought, those in their turns being directly and indirectly re-transformable into the original shapes."

Prof. Youmans does not indeed claim that this has been proved —only, that "it *seems* abundantly evident." As if willing to set logic at defiance by an illicit process which even the most modern science must condemn, he argues thus: "If the forces are correlated in organic growth and nutrition, they must be in organic action; and *thus human activity in all its forms* is brought within the operation of this law," the correlation of forces! Even the logic of "the more advanced thinkers" must rebuke the rashness of such a defense. Apparently rebuked by his own reflection, he offers this apology: "From the great complexity of the conditions, the same exactness will not, of course, be expected here as in the inorganic field." We reply, the greatness of the issue involved demands, at least, equal exactness. We commend to the careful consideration of the Professor, his own axiom marked with his own emphasis, "Not he who *guesses* is to be adjudged the true discoverer, but he who demonstrates the new truth." p. XVI.

Prof. Barker supplements the want of demonstration by this appeal: "Can we longer refuse to believe that our thought is in some mysterious way correlated to the natural forces? And this," he significantly adds, "and this even in face of the fact that it has never yet been measured." We reply to positive science that it claims to be positive or nothing, and it cannot expect us, on such grounds, to adopt this theory in all its scope and with all its conse-

quences. Refusal of Prof. Barker's appeal does not seem to us difficult; indeed, according to the axiom of positive science as announced by the American Editor, it seems to us obligatory.

In view of the discordant definitions, the contradictory testimony of the experiments, the inharmonious notions of the factors and the scope of correlation, the supporters of the modern theory of forces exhibit remarkable facility of belief in this direction. Their readiness to adopt this theory awakens the suspicion of haste that cannot wait for positive knowledge. They may moderate their zeal by reflecting upon the pithy statement of Prof. Tyndall: "The passage from the physics of the brain to the corresponding facts of consciousness is unthinkable;" or, upon the friendly warning of Dr. Bray: "There is no bridge from physics to metaphysics, there is no road that way; the only road is from metaphysics to physics." It is not at all surprising that, in view of the difficulty in his line of advance, Prof. Barker preferred appeal to demonstration. This difficulty will be more apparent from one or two citations with which we conclude our indirect line of argument.

One authority which will not be suspected of unfriendly prejudice in this direction, Dr. Bastian frankly admits that "however probable it may be that what we know as sensation and thought are as truly the direct results of the molecular activity of certain nerve centers, as mechanical energy is the direct result of a muscle, this cannot be proved." Bastian's "The Beginning of Life," I. p. 46.

"Granted," says Prof. Tyndall — *Norfolk News* (Eng.), Aug. 21, 1868 — "Granted that a definite thought and a definite molecular action in the brain occur simultaneously, we do not know why. Let the consciousness of love, for example, be associated with right-handed spiral motion of the molecules of the brain, and the consciousness of hate with a left-handed spiral motion, we should then know when *we love* that the motion is in one direction and when *we hate* that the motion is in the other — but the *why* would still remain unanswered."

Another authority which will be held in no less regard, Herbert Spencer, favorably discussing this very question (Princ's. of Psychology, 1869, No. 22, p. 194), asserts: "There is no fixed or even approximative quantitative relation between the amount of molecular transformation in the sentient center and the peripheral disturbance originally causing it. Between the outer force and the inner feeling it excites, there *is no such correlation* as that which the physicist calls equivalence, nay, the two do not even maintain an unvarying proportion. Equal amounts of the same force arouse

different amounts of the same feeling, if the circumstances differ. Only while all the conditions remain constant is there something like a constant ratio between the physical antecedent and the psychical consequent."

At this essential point the case requires, and we demand a precise statement of the correlation if it exists, and an exact quantitative estimate of the relation assumed by this theory. On the contrary we are met by the admissions of Barker and Bastian and Bray and Spencer and Tyndall, that "it is a hopeless attempt to establish any thing like a quantitative estimate."

According to the confession of its own supporters, the modern theory of forces breaks down of its own weakness at its very entrance upon this disputed field. It may well be questioned whether this theory would ever have received the advocacy of such confessors were not the theory supposed to be serviceable, if not essential, to another theory dear as a nurseling to this school of thinkers—the modern theory of evolution. But it is quite unnecessary to support a fallacy in order to establish a fact, indeed, it is illogical and imprudent. A fallacy can be serviceable only in perpetuating a fiction—like this counterfeit theory of evolution,—for there is a theory of evolution which is true.

But to return from this brief digression toward evolution, we ask if, according to the definitions and confessions of its supporters, the modern theory of forces proves so defective and treacherous on the very margin of this disputed territory in estimating the quantitative equivalent of the nervous system "because," as it is admitted, "the manifestations of this activity are so subtle and eluding," what must be its more disastrous failure when the complication is increased by the addition of other factors no less elusive, such as muscular activity mingling with nervous, and physical nutrition mingling with both—and yet other factors no less elusive and still more subtle—consciousness and sensation and volition and conscience, and reason.

And here we reach our line of direct argumentation. In this higher field of observation, the subject is *psychical* not physical, else it were the same field still, language itself were false, consciousness itself deceptive, and the term correlation meaningless, and all measurement impracticable, (for matter cannot measure itself), and all knowledge impossible, for there would be nothing that could know, perhaps nothing that could be known. Who at least could say that there would be any thing that could be known? This alternative would prove more disastrous to the supporters of this theory

than to admit the existence of mind. In this higher field then, the subject is *psychical* not physical—the agent is spontaneous, not mechanical, hence no common gauge can here apply its measurement. More than this, in this higher field this psychical subject, this spontaneous agent is a *rational person*, not a material thing,—knowing itself and knowing surrounding things, but not known of them—knowing forces, controlling, employing, applying forces, yet not itself a force—capable of thinking, of feeling, of willing, as forces are not—competent to reflect, reason, love, and worship, as forces are not—conscious of freedom, and obligation, and responsibility, as forces are not—cognizant of justice and injustice, of right and wrong, of merit and demerit, as forces are not. No theory of forces, however modern, can degrade a person, a psychical spontaneous rational person, to a force. Conscious of such a nature and such ability, the mind sees, between itself and material things, a distinction which no theory of forces can obliterate—a distinction more indestructible than any force.

Through the mind we learn of matter by tracing material facts,—although matter cannot reverse the process and learn of mind. To know matter we must study the facts; so to know the mind we must study the facts. While the facts of mind are utterly diverse from those of matter, they are (to say the least) no less certain. The knowledge of mind is, at least, as valid as the knowledge of matter. Only by our knowledge of mind can we verify any knowledge of matter. Mental consciousness is the primary essential. In this fact of mind our knowledge begins, and through it, absolutely, does our knowledge extend, and by its testimony we learn how distinct and different are the fundamental characteristics of mind and matter. Consciousness and thought and choice which are characteristic of the one, are impossible to the other. Again we ask, what common measurement can be applied to such *diverse facts?* What common gauge will answer for mind and matter?

But more than this, how can we know ourselves? Only by our own consciousness. And how shall others know us? Not by the appliance of any mechanical measurement, but by studying our manifestations of mind and character, in the light of their own consciousness. Our deeds may be entirely deceptive. How, then, does the estimate of their apparent and real value vary? The very action which, at first, the public deemed commendable, may, when understood, appear culpable. Why is this? Because, conscious intention gives real character to human action. "A man may smile and be a villain." On the other hand, a frown may be in

sport, like the play of a father with his children, and thus be a sign not of anger but of love. The same blow may smite down an enemy, or quicken the merriment of a friend. The same act may be the salutation of a saint, or the kiss of Judas betraying Jesus. And so, these words of Solomon have been accepted by the world as a proverb: "Faithful are the wounds of a friend; but the kisses of an enemy are deceitful." Why, again we ask, why, this varying estimate and this varying value of human actions? Again we reply, because the conscious intention gives real character to the action. Thus we understand through our own consciousness, the apparent paradox, but the real propriety of the statement so beautifully made by the poet-king of Israel: "Let the righteous smite me; it shall be a kindness."

But no such rule can be applied to the movements of matter. It is utterly impossible even to attach to them any character either of merit or demerit. The blow from a falling hammer may kill a man, and yet, by universal consent, involve not the least moral character; while that blow, if impelled by malice prepense, becomes murder and the perpetrator is, by universal consent, condemned as guilty of a capital crime.

But more than this, — long before the public may have understood his conduct and character, the man himself has understood both, as he at first and fully was conscious of his own intention; and long after the public may have rendered its verdict of praise or blame, the man himself has known whether he was rightly judged. As we study the facts of matter and of mind, farther and farther do we get from the correlation of material forces with mental action.

But more than this, while no keenness of observation, and no mechanical gauge can possibly determine the character of an external deed like the stern, persistent and painful surgery of Dr. Brown Sequard, in the critical case of Mr. Sumner, which seemed intended to kill, but was designed to cure, the man may even misjudge his own physical acts unless he study his own consciousness, and thus know himself.

In St. Vitus's dance, how shall others understand, how shall the man himself understand his strange actions, unless he question his own consciousness and know whether these actions are with or without the consent of his will? Whether they are the effect of mental choice or the effect of physical disease? If, on the one hand, action be known by the testimony of consciousness to be involuntary, and thus adjudged to have no moral significance; so, on the other hand, may inaction as in the case of paralysis be known

by the testimony of consciousness to be involuntary, and so be adjudged to have no moral significance. Thus within the range of human actions the same act may, in the true light of consciousness, have different character and value, and totally different acts may, in the same true light, have the same character and value; while opposite action and inaction may have precisely the same value *without* any character, as in the St. Vitus's dance and in paralysis; or have the same value with a definite character, or have different values and different characters. Not only may precisely the same kind of action have an utterly different character and estimate according to the mental intention, but it may produce an entirely different effect, according to the mental intention which prompted it, now with a friendly intention imparting pleasure, and now with an unfriendly intention imparting pain, thus, in its result, differing both in quality and quantity according to the mental intention, baffling the calculation of the most watchful mechanical gauge. So the same word producing the same material vibrations will, according to the feeling it represents, awaken joy or grief, pride or shame, attraction or repulsion, defy and elude the most skillful mechanical measurement. No fixed mechanical gauge, then, can be applied in this higher field, no material measurement is possible, *a fortiori*, no quantitative equivalent can be found.

If, then, from the standpoint of experiment, Prof. Barker and Bastian and Bray and Spencer and Tyndall found it "a hopeless attempt to establish any thing like a quantitative estimate;" from a still higher standpoint (in consciousness itself) we see the attempt is hopeless.

Now, of these factors — force, matter, mind — which do we know best? We know matter only through force. But are we conscious of force? No, we are conscious only of its impressions on us — its attractions and repulsions, gravitation and diremption, solidity and extension, etc., which are the results of force, and of these, we are conscious only through the senses.

Are we conscious of thinking and feeling and willing? We are, *directly conscious* of these; but these are spiritual acts; at least, different phenomena from solidity and extension. If, as Mr. Spencer is compelled to admit: "The utmost possibility for us is an *interpretation of the process of things* as it presents itself to our limited consciousness" — See Bastian, p. II — this is especially true when we pass from the realm of things to the realm of persons. It is not through the bodily senses, but through consciousness itself, that we know the mind; and, thus, our knowledge of mind is at once

more direct, more complete and more reliable. This decisive point Mr. Spencer is compelled to concede: "The personality of which each is conscious and of which the existence is a fact beyond all others the most certain," etc. F. Princs. p. 66, and Mr. J. S. Mill (Introduction to Logic), is compelled to assert: "Whatever is known to us by consciousness, is known beyond the possibility of question." Now, if consciousness is "the light of all our seeing," both what is within and what is without, it is obvious how much of our knowledge it includes. In this light of consciousness we may learn each for himself and better than his neighbor can tell him, what mind is.

And the first answer of consciousness is, that mind is distinguished from matter—the self from the not-self—in which simple judgment two important things are involved: the one, that the mind or self *is;* and the other, that mind is *distinct* from matter.

Again the answer of consciousness is, that mind is a *spontaneous* agent, acting without compulsion, and even in spite of compulsion; again, that mind is a *rational* agent, capable of knowing itself and of knowing the material universe—capable of recognizing and obeying obligation. But, not only does the mind see itself as person and not thing, possessed of a will in liberty, and a rationality to guide that will, and a conscience to respond joyously to the harmony of the will and the reason, or sadly to their discord; the mind not only sees *what it is*, but also *shows what it is*. Superior to material forces, it brings them into a higher unity than, of themselves, they could ever attain, making them subserve a human organism; elevates the life-principle to a higher service than mere instinct; exalts the senses to a nobler office than that of mere sensual gratification; employs all these at the behests of its own rationality to serve and secure a higher and still higher manhood. This is utterly different, both in kind and degree, from what pertains to physical forces. Thus, by the right of its own conscious excellence, it holds dominion and for the purpose of augmenting that excellence, it puts all physical forces and all life-instincts and all the bodily senses in subjection to this higher unity.

By this two-fold process of induction and deduction, from the standpoint of scientific experiment and from that of philosophic observation, we see how "hopeless is the attempt to establish any thing like a quantitative equivalence," how hopeless the attempt to establish a correlation between the forces of matter and the activities of mind.

But, the direct argument from mind is by no means exhausted. Moral government exists. We recognize its obligation upon ourselves; we impose the same obligations upon others. It is vindicated by the individual conscience, and by the public conscience, and sanctioned by common law, and appealed to in every struggle for freedom and justice and reform. This recognition, this vindication, this sanction, this appeal—all are confirmed by the individual conscience, making each a law unto himself, leaving each at liberty within this moral realm, yet holding each responsible, with supreme sanctions of commendation or condemnation which the human soul cannot escape—a confirmation superior to all skeptical reasoning, or theoretical contradiction, or scientific adjustment. Nothing of this kind can be said of material forces; it cannot but be said of mental activities. There can be no correlation between them, either quantitative or qualitative. On the one hand, material forces never become responsible however much they may be employed by the mental activities; on the other hand, mental activities never become irresponsible however much they may employ the material forces. The distinction is essential and immutable. Correlation here is impossible. And yet the modern theory of forces contradicts this highest dictate of the soul; and, in spite of the evidence of literature and law, of private and public recognition, of conscience and reason, denies the possibility of moral government and of all morality. It places in the same category, material forces, and intellectual and voluntary action, denying all difference in kind and quality. "All actions," says Bray, 309, "organic or inorganic, mental or material, all actions being equally necessary, *there can be no intrinsic difference* between them." Merit and demerit, praise and blame at once perish. Dr. Meissner proposed to show not only that heat is a mode of motion, but that vegetable and animal life, and human will, and love, and thought, and even God himself, *are but motion!*—the one, no less than the other, subject to necessity and destitute of morality!!

Its logic is sound if its premises are valid. Merit and demerit are not predicable of mere force; and voluntary action is, by this theory, transformed and degraded into mere force. Hence merit and demerit are not predicable of human action! According to the modern theory of forces both morality and moral government, therefore, are impossible!!

We would not discard this theory because of its consequences; but, because it is unsound we discard the theory with its consequences.

But not to dwell longer upon the argument from mind, we pass to another direct argument—the argument drawn from life.

After the admission of Bastian that "the intermediate links in the life process are not easily established;" and Virchow's statement that "chemistry has not succeeded in forming a blastema (the general formative compound of tissues), nor physics in forming a cell. What does it matter?" And Spencer's confession: "The forces which we distinguish as *mental* come within the same generalization (as the nervous). Yet *there is no alternative but to make the assertion;*" and Prof. Tiedemann's declaration: "The origin of organic matters and living bodies is altogether beyond the range of experiment;" and Bray's assertion: "The first requisite is life, which, so far as we yet know, proceeds only from life;" and Huxley's admission in his inaugural address before the British Scientific Association (1871): "Looking back through the prodigious vista of the past, I find no record of the commencement of life, and, therefore, I am *devoid of any means* of forming a definite conclusion as to the conditions of its appearance." After such admissions it is not necessary to linger long upon the question of life as related to the modern theory of forces, however fully we may choose to consider it for the sake of the discussion. Evidently the process in nature is to evolve life from life; vegetables from the living seeds (each after its kind), fish from the living spawn, animals from the egg or living germ, and man from the living germ or the egg.

The earth brings forth—not something from nothing as it would if life, the greater, were evolved from mere physical forces, the less—but what it has received as a living conception, the physical forces (heat, light, electricity, magnetism, chemical affinity) each and all aiding to develop, but not creating the life.

If spontaneous generation ever be effected by the skill of man through strange and arbitrary combinations, yet spontaneous generation is not nature's method.

Everywhere through nature's realm, so far as we trace it, in the present or in the past, life proceeds from life. The scientific rule is scrupulously observed; *Causa aequat effectum.* The vegetable takes lifeless mineral ingredients and, applying light and heat, transforms these lifeless ingredients into living matter; this is effected as Bastian himself admits "under the influence of pre-existing *protoplasm,*" II. p. 77. Crystals, evidently, as Bastian also admits, are statical aggregates — living organisms are dynamical. Crystals, in forming, emit heat—organisms, in growing, absorb heat.

Organic molecules or atoms have mobility—inorganic molecules have immobility. Inorganic bodies are built up from without by accretion — organic bodies grow from within by assimilation. Organic living bodies have the power of reproduction or self multiplication—inorganic lifeless bodies are incapable of self-multiplication or reproduction. In the life-process there is a ceaseless strife between vital affinity and chemical affinity, the former proceeding to build up, the latter to destroy the organism. The life-process is the triumph of the former, which not only employs other physical forces but subjects even chemical affinity and gravity to its high purpose. Indeed Prof. Clark asserts ("Mind and Nature," p. 7), "Organized beings exist in direct opposition to natural chemical affinity." If this be true, we see the less probability that chemical agency, however skillfully employed, can create life, and the greater propriety in Huxley's statement: "Constructive chemistry could do nothing without the influence of pre-existing protoplasm," Bray, p. 35.

To careful and even to careless observation, life ever appears employing forces, superintending and directing their service, using them as constructive aids to bring it nourishment and to build up for itself a fitting organism so that every seed shall have its own body, and every plant its own distinct form, and every animal its own characteristics, and every man his own individuality or personality. For its use, life seeks out appropriate forces, separates them from the inappropriate, and subjects them to its service, producing a higher unity by its own mastery and a greater diversity for its pleasure and profit.

We would not, then, style life, a force—not even a vital force—but, an activity or life-power; while mind is not a force—not even a spiritual force—but, a spiritual activity or mental power.

The distinction is by no means illusory or unimportant. It reveals the barrier between matter and life, between matter and mind—a barrier which we have no fear that scientific progress will ever break down or remove, however much some scientists desire to effect this.

There may be vital forces—chemical, like the digestive force of the stomach which may be imitated in the chemical laboratory—mechanical, like the propulsive force of the heart following the most precise rules in hydraulics—muscular force moving the limbs like the mechanical action of the lever—there are these vital forces which, together with physical forces like heat and light, the life uses in its activity and power—forces which are correlated to each other,

but which the life uses instinctively and directs not as equals, but as servants to accomplish its higher ends. Prof. Barker labors through successive pages to prove what we readily admit and assert, that all these physical operations under the supervision of life are in correlation.

While he admits, inevitably, that vital force (as he styles the life-power), is different, dominating the physical forces, asserting its superior right, "uniting substances which in inanimate nature ever flee from each other, separating that which is incessantly striving to unite" (p. 4); and, without even pretending to demonstrate, he merely assumes correlation in such contingent phraseology as: "Chemistry doubts not her ability to produce" * * * * "A few years hence will doubtless give us," etc., etc.

Life is a feeling of want or need which goes forth into spontaneous activity and reproduction. Do those who clamor for spontaneous generation (archebiosis) and pretend to effect it, produce such life? As a power, life is as primitive and independent in its origin as are the forces in their origin. While it differs from them in kind, it is also their superior in degree, the life instinct, whenever and wherever it appears, directly going forth with original authority to take for its service and assimilate to itself whatever it may select from earth and air and sea and sky. In the simplest processes of the life-power, this authority is manifest in its on-workings; and, within this whole range *instinct* rules. In the higher processes of this same life-power, within the whole range of sentiency, *sense* with instinct rules; and in the highest processes of this same life-power, within the whole range of rationality, *reason* with sense and instinct rules. So that within the human sphere, as *not* within the animal or the vegetable, even sense and instinct are attended by the informing presence of reason.

There is then between the physical force and the life-power a distinction that is fundamental, characterizing the force as mechanical, the power as living; making this the user, that the used; and, by the very distinction in kind, ruling out correlation of forces as not applying in terms, nor possible in fact.

This view of life is confirmed rather then confuted even by the explanation of Dr. Carpenter. As Dr. Carpenter is conspicuously put forth by the American editor, as the representative of the modern theory of forces in its application to life, I shall be excused for referring more freely to his lecture (see "Correlation of Forces," etc., edited by Prof. Youmans, pp. 401, 402, 411, 412, 414, 419, 420, 407, 421, 425. — See also Balfour Stewart's "Conservation of Energy," p. 161. — Also LeConte, pp. 185–6–8, 197, 201).

We have presented the *negative* arguments drawn from the admissions and discordant definitions of the advocates of this theory, and the *positive* arguments drawn from the nature of mind and of life. By this two-fold process of argumentation — direct and indirect — we have shown the invalidity of the modern theory of forces.

Here we reach the limit of the specific discussion involved in our subject; and, here we can logically rest. Yet, it may be justly expected that we refer to the modern theory of evolution based as it is upon this theory of forces.

We admit an evolution originated by a divine Creator, guided by a divine intelligence, and governed by a divine purpose — an evolution consistent with the conservation and correlation of forces throughout the material universe. But the modern theory of evolution, based upon the modern theory of forces, discards a divine Creator, a guiding intelligence, and a controlling purpose, and assumes a force that is physical, persistent, ultimate, unintelligent, unconscious, unknowable; which evolves into all things that are — matter, life, mind, or to be specific, into heat, light, electricity, magnetism, chemism, consciousness, reason, volition. Now it follows, from what has been said, that evolution based upon the correlation and conservation of forces as applicable equally to life and mind and physical forces is untenable. If life and mind are fundamentally and essentially distinct from physical forces, the modern doctrine of evolution is impossible. If life and mind are not convertible into heat, light, elctricity, magnetism, and chemical affinity and these physical forces convertible into mind and life, then the modern theory of evolution fails.

This theory of evolution is unsound not only in its foundation, but unsound in itself. (1.) It is assumed by its leading advocates, like Mr. Spencer, as the settled and only theory, when it is not demonstrated nor proved. Thus it violates the very principle on which positive science presumes to rest, and invalidates its own process. As an historical fact this theory of evolution is not proved; as a scientific fact, "an absolute law" without a law-giver, it is not demonstrated. We might safely go farther and say, what it is not necessary here to affirm, that, in the nature of the case, it never can be verified by induction (historic or scientific), never can be demonstrated by positive science.

(2.) This theory assumes that force, out of which all things are to evolve, is *unknowable*. Now by what authority of positive science does it make this assertion? How does it know so much

about this force as to warrant the assumption that it is *unknowable?* Granting for the sake of the theory, that it may as yet be unknown, does it therefore follow that it is unknowable?

(3.) It assumes this force to be the ultimate, the primary or first. But this contradicts the preceding assumption that it is unknowable. If it is unknowable how can it be known as primary or ultimate? And more, there is no proof that this unknowable force (as Mr. Spencer styles it) is ultimate. Mr. Spencer admits that there is no such proof. Why stop with force as the ultimate? Our consciousness forbids this, *e. g.:* our consciousness declares that in personal experience an exercise of will is before force. More than this, our observation forbids it. When the person dies and the will ceases or is withdrawn from the human frame, personal force ceases.

(4.) It assumes that this unknowable force is *physical, i. e.*, force without intelligence, or wisdom, or purpose—blind force acting by chance or by necessity, "whirling and whirling evermore until it becomes self-conscious," and thinks and reflects.

To say that this force is physical, contradicts the assumption that it is unknowable. More than this, experience and observation forbid this fourth assumption, *e. g.*, observation indicates that all force in the material world is wisely ordered, and that all organisms are skillfully adapted; the eye to seeing, the ear to hearing, the generative organs to reproduction, so that long before they are needed, as they form in the womb, it is in exact and complex accordance with the laws of optics and acoustics and reproduction, precisely adapted to future use in these directions. And these are samples of universal nature. At the same time our experience declares that force adapted to a purpose is guided by intelligence—a declaration which no logic can confute. More than this, we infer the nature of a cause from the nature of the effect. But for this principle induction itself were invalid, and positive science utterly inconclusive and useless. So here the effects bear the marks of intelligence, of wisdom, of purpose, therefore the cause must be intelligent and wise, and not mere physical force.

(5.) This theory of evolution assumes not only that this force is unknowable, yet at the same time, ultimate and physical; but also that it is unconscious. Again we reply, this contradicts the primary assumption that it is unknowable. If unknowable, how is it known to be unconscious? Thus, the contradictions involved in this theory multiply. It contradicts, in the sixth place, a fundamental axiom in reasoning: *Causa aequat effectum* — an effect cannot be greater than its cause. But here is a physical force without intelligence,

wisdom, or purpose, an unconscious force evolving (according to this theory of evolution), evolving forces that are living, conscious, intelligent, wise, and moral! Here is the greater constantly evolving from (coming out of) the less — the higher from the lower! "*Causa aequat effectum*," say these "more advanced thinkers," the effect equals the cause; and with mathematical precision they demonstrate, if a cause (C) produces an effect (E), then E = C. So, if (E) produces another effect (S), then S = E = C. Therefore, by the onworking of these causal forces, no degree or equivalence of force is destroyed or annihilated, so that the effect shall become less than the cause, whether to the 10th or 10,000th link in the chain of progress. And so say we as earnestly and confidently: *Causa aequat effectum* — the cause equals the effect, therefore, by the onworking of these causal forces from the first, no degree or equivalence of force is produced or created, so that in any case the cause shall be less than the effect, whether to the 10th or 10,000th link in the chain of regress. This rule evidently works both ways. It is applicable to the evolution based upon this modern theory of forces, as to conservation and correlation of forces. Nothing else and no more can be evolved than what was at first involved. This axiomatic rule, which Liebig so elaborately, yet so unnecessarily demonstrates, proves too much for the doctrine of evolution. The simple and homogeneous, which in the hands of Mr. Spencer and the evolutionists grows up into such heterogeneity and complexity, must, at the outset, according to the remorseless axiom, be and contain all the complexity and heterogeneity. Hoist by its own petard, this false evolution disappears, and with it the clearly implied, if not carefully concealed, atheism; and theism appears, indestructible and persistent, and with it involution — for God, as author and finisher, is all and in all — and with this the true evolution, as we shall presently see, for He is before all things, and by Him all things consist.

(7.) It contradicts its own principle — that no force is created by the exercise of force. Yet it would, by the mere exercise of force, lift up a lower force to a higher plane than the lower force could of itself attain.

(8.) This theory is deceptive. It assumes a false name, evolution; while, by its own showing, it is not evolution, but involution.

(9.) Positive science boasts of its method of experiment and observation, and claims tc rely upon facts. By what process of observation or experiment is it discovered that force is eternally persistent? Does this rest upon fact or upon assumption? Here

again the theory contradicts the method. No possible induction can demonstrate such a conclusion, no fact does or can verify it. Besides, according to the theory, this force is unknowable. How, then, can it be declared persistent? and, especially, how can it be declared eternally persistent? The declared eternal persistence of force inevitably involves the theory in a two-fold contradiction. Perhaps, the force which seems so persistent may have had a beginning somewhere in the past; perhaps, somewhere in the future it may end. There is nothing in positive science that can or dare deny this.

"Existence," says Mr. Spencer (F. P., vol I, p. 146), "Existence means nothing more than persistence." Existence, then, may have had a beginning — by the self-silencing admission of this theory — so it may have an end. Besides, if persistence is existence, from what, we ask, does this persistent force stand out, or exist?—from itself? This is a supplemental contradiction which ranks as an absurdity.

These "advanced thinkers" cannot know, within the limit of their theory, what force is; by what possible right, then, consistent with their theory, can they postulate that force is the cause of all manifestations within us and around us — the ultimate, the persistent cause? Positively none. Their only answer is given in these words of Mr. Spencer: "We cannot go on merging derivative into wider and still wider!"

But, we reply, why not go on? By what right do they stop at this point? Evidently, none. Do they know that they have found the ultimate cause? Certainly not. Do they even know what they have found? Do they know that force is persistent and indestructible? We affirm that they do *not* know. The very admission of Mr. Spencer is: "Force is an unknown cause, * * * and the persistence of force is a truth which transcends experience." Here Mr. Spencer, together with his school abandoning induction, stands no longer on experience or demonstration, but on assumption postulated as an ultimate! His own theory forbids his occupying this position and condemns it as wholly untenable for these theorists. He does not *know* the ground he occupies. He does not know whether force — his assumed ultimate — is eternally persistent or not. According to his own admission, he does not know whether force itself may not be self-originated then and there; or, whether it be originated by chance, he does not know; or, whether it shall abide, he cannot tell!

This physical philosophy leads to interminable difficulties. While it leaves unsolved the profoundest problems of existence, it starts more questions than it settles. Thus the mechanical theory is partial and unsatisfying.

The very assumption that force—physical force—is the basis of being, ultimate and persistent, while it discloses the unity indicated by science, discloses also, the insufficiency of force as the assumed first cause; and presses the mind to seek a sufficient cause of force itself and of all things, till some of these more advanced thinkers are compelled to declare with Bray (p. 168): "All force is mental force, such 'will-power' as we are conscious of exercising in our small individuality;" and, with Sir J. F. W. Herschel (p. 224): "The presence of mind is what solves the difficulty;" and, with Wallace (p. 224): "The inference is, that *force* is produced in the only way we know force to be produced, by the will of conscious beings."

Thus science, whether with willing or unwilling footstep, is led by its pathway of induction toward an ultimate, persistent, intelligent, and, so sufficient causation. And scientists are doing in the interest of science, just what is needed in the interest of religion, to show force and law, unity and multiplicity, pointing back to God.

(10.) This theory assumes that life and mind are convertible with material forces, thus destroying the fundamental distinction between mind and matter and impeaching consciousness which declares mind distinct from matter—the one knowing, the other incapable of knowing; the one moral, the other incapable of morality, while mind is an activity which uses matter subjecting the material to the service of the mental.

(11.) It assumes a *correlation quantitative* between material forces and life and mind, yet admits (see Mr. Spencer and others), that this has not been proved and cannot be—that the task is hopeless.

(12.) It assumes that, because God cannot be detected by experiment or discovered by scientific methods, therefore, He *is* not; bowing him out of the universe because he is not indispensable to the hypothesis of positive science, or ruling him out of existence because he does not appear within the range of the telescope.

To this arbitrary rejection of God it is sufficient to reply that this modern theory of forces and of evolution is by its own confession self-silenced.

It does not know, *a fortiori* it cannot deny. It has not, forsooth, proved that there is a God—certainly it has *not* proved that there

is no God. But more than this, by this virtual and unequivocal rejection of God, this theory virtually and unequivocally commits itself to atheism and chance. There can be no middle ground. It is either theism or atheism—God or chance—the author of the universe. Necessity is only another name for chance, blind as well as capricious!

Here, in addition to all the contradictions already specified, we find a defect sufficient of itself to condemn the theory as invalid.

In this emergency to save the name and the fame of modern evolution, a certain class of advanced thinkers earnestly call upon evolutionists everywhere to adopt archebiosis. It would be remarkably convenient, were it possible, thus to save evolution from breaking down as it otherwise does by the absurdity of evolving the greater from the less, and so evolving something from nothing. But archebiosis is only another horn of the dilemma alike fatal to evolution. The process of archebiosis is a process of chance. It is possible not through order, but disorder, the like producing the unlike, the lifeless the living, the inorganic the organic; and archebiosis abandons evolution to the reckless sport of chance.

I said that either process is fatal to evolution. If heterogenesis be accepted the process is confessedly capricious. It is either a living or a lifeless process as it may chance working toward the assumed result; and, the result is inevitably capricious, for the effect may be precisely similar to the cause—life from life, or precisely dissimilar — life from lifelessness. From the same process the result is living or lifeless as it may chance. If there is any law recognizable, it is lawless caprice, which no science can formulate or even allow. If heterogenesis be rejected, evolution, as proposed by this modern theory of forces, is still by chance; for intelligence and design are deliberately ruled out from the beginning, and the result is an effect greater than the cause, viz.: life and intelligence evolved from a cause which possesses neither —evolved from physical forces, a result possible only by chance. The absurdity is equal, at least, to that involved in heterogenesis since the effect is not only different in kind from its cause, but different in degree—greater than its cause, so that for evolution whichever way it fly is chance; and, in itself 'tis chance.

Evolution, be it ever remembered, evolution based upon the modern theory of forces, assumes the task of evolving all things, even life and mind, from physical forces; and by either process of heterogenesis or homogenesis is involved in the fatal dilemma of chance, and the result is an inevitable absurdity. Chance can be excluded

only by the presence of an intelligent and Almighty power with a wise and free purpose originating and ordering all forces. There is an evolution consistent with such a purpose and subject to such a power by whom "we understand the worlds were framed; so that things which are seen were not made of things which do appear," Heb., 11, 3; so that forces which mould and move the universe are the expression of His will, *existing* henceforth, *i. e.*, *standing out from* God, as efficient realities in space and time, subtler than the fiery mist or the star-dust, subtler than the attenuated nebula of the modern evolutionist, yet no less real, and more ancient, with causal energy unsurpassed by that assumed in the modern theory of forces.

These divinely created forces, by their interworking and counterworking and onworking, as secondary but efficient causes, "make the things which do appear" (*i. e.*, the material phenomena), and mould and move the atoms and the worlds; at the wise behest of their divine Author they constitute these worlds into a universe of order; and, at the same behest, continue the universal order.

Hence, the forces are persistent or indestructible beyond any possibility of finite use or change. Only He who at His own behest put them forth into space and time as local and temporal efficiencies can reverse or recall them.

Hence, the forces are correlated to each other in their very constitution and are convertible by finite use or change, as we see continually in the material modifications and in human appliances.

Hence, forces may be multiplied and varied, at the divine behest, to build up and adorn and perfect the material universe, and fit it better to become the abode of living things, as clearly appears to have been done. Upon the primal forces of cohesion and repulsion and revolution, other forces being divinely begotten or superinduced, the world-process advanced until light and heat and electricity and magnetism and chemical affinity all mingled in harmonious efficiency; and the primeval chaos was gradually transformed to a universe of order and pervaded with light and beauty.

Hence, the forces have evolved not something greater than they involved at first, but what was at first involved — just this in kind and degree; evolved not as it may chance, but as it should be in the view of eternal wisdom; evolved not by "the fortuitous concurrence" of mystic atoms inert, but by the orderly onworking of efficient forces controlled, evermore, by the Divine power and guided by a Divine purpose.

Thus in the true view, evolution has a divine origin and a divine purpose, and the universe is comprehensible and the order of the

universe rational. In the false view, evolution has neither origin nor purpose; the universe, as a ceaseless series of the conditioned, is incomprehensible, and the order of the universe is mechanical and irrational. The former view culminates in knowledge, comprehensive and satisfying: "For the invisible things of Him from the creation of the world are clearly seen, being understood by the things that are made, even His eternal power and Godhead," Rom: 1, 20. The latter view ends in nescience, perplexing and disheartening. Within its distant but darkening range, science, material science, pursues its weary way in the tread-mill of experiment amid material forces, seeking for life which can never be phenomenal but ever and forever evades our physical senses, seeking at nerve centers to detect and dissect mind itself, which ever and forever eludes the search, replying evermore to the deluded seeker that while it acts in time it is not confined to space, seeking in every nook and corner of the material universe for the great first cause if haply it may feel after him and find him, but, with the eye of intuitive reason closed, failing to see him though he be not far from every one of us, terminating its unsuccessful search in utter nescience and despair. Nothing but perfect demonstration can ever establish such a result, or authorize such a conclusion. And in the very nature of the case, demonstration of this negative conclusion is impossible. "All that induction *can* do, as scientific, is to observe phenomena and sequences *in* nature and put them into convenient generalizations."

This modern theory of evolution is not only unsatisfactory and invalid, it is wholly uncalled for, and, therefore, even the presumption is against it. We are not, needlessly, to multiply hypotheses. The old dictum of Occam remains valid: *entia non multiplicanda sunt praeter necessitatem.* Let Occam's razor be applied to this needless hypothesis of evolution. This presumption is strengthened by the presence and prevalence of an older theory, and a better — an evolution at once comprehensive and satisfactory, comprehending all the facts of material science, and satisfying all the spiritual demands of the soul.

The real issue, then, is between the false and the true theory of evolution — between atheism and theism — chance and God. The true view is not only sublime, but is full of sympathy and support and guidance — almighty support and guidance for the material universe — almighty guidance and support and sympathy for man. Whatever changes may occur in material nature — and what finite mind can forecast the possibility? — whatever changes may occur, yet, by the wise behest of Almighty God, order — divine and

benign order shall evermore be preserved; and, man evermore may trust in God and not be afraid, and, in the light of his divine presence and the strength of his divine aid, go on to improve and enjoy the life which now is and the life which is to come.

The false view, though but a step removed from the sublime, is — it must be confessed — utterly devoid of sympathy, of support, of guidance and rational government. By it we are plunged into the frightful abyss of nescience. If force be impersonal, what are its powers and possibilities — whether it be mechanical necessity, or capricious chance, or blind fate — whether it be malicious or merciful, as a friend, a fury, or a fiend, or a fantasm, is unknown! This were a conclusion horrible enough, were we permitted by this modern theory of evolution to hope in a God behind the unknown force and superior to it, who might rescue us from the frightful abyss. But to be denied even this hope and to be left to sink, at last, in the fathomless vortex of atheism, at the mercy of a blind but tremendous and pitiless force, forever unknown and unknowable — this is the depth of woe, the climax of horror.

And to this we are driven by this modern theory of evolution based upon the modern theory of forces.

ROMAN ORTHOEPY AS OPPOSED TO ENGLISH-LATIN.

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The Roman orthoepy* is here accepted as, not only different from the current English-Latin pronunciation, but as diametrically opposed to it.

The latter is necessarily regarded as having no claim to specific consideration in this place. The reasons, stated in brief, are these. The English-Latin pronunciation is, by universal confession, based on assumed *ignorance* of the truth — a foundation, in these days of philological research and discovery, simply unscholarly and self-subversive. It is not only a mispronunciation of the Latin tongue, but is also the most hostile to every just view of the ancient pronunciation naturally conceivable; no occidental language being in its vocal elements so divergent from all the Romanic tongues as the English. It is itself a comparatively modern apostasy from the better system and use of those earlier English Latinists, who, flourishing nearer the times, and more under the influence, of the living Latin of the Church and the Empire, as well as before that decline and corruption of the language which resulted from the inroads of the reformation, and the growing ascendancy of the English language, were better informed and guided than their later successors. It is, further, not only so at war with all other systems of Latin pronunciation, as to destroy the practical utility of the language, both as a preparation for the vocal study and use of its modern derivative

* My aim has been the simple one of recalling the attention of our University Latinists to the character and claims of the Roman orthoepy, and of putting more readily within their reach the leading facts and principles involved. I have, therefore, made no attempts at originality, but have freely availed myself of such practical sources of information as were at hand. Two of these I especially commend to the reader, as accessible and inexpensive. "Roman Orthoepy," Professor J. F. Richardson, Sheldon & Co., New York, and "Elements of Latin Pronunciation," Professor S. S. Haldeman, Lippincott & Co., Philadelphia; the first the more readable, the last the more exhaustive; and still more recent, "Latin Pronunciation," Professor Waller Blair, A. S. Barnes & Co., New York, a pains-taking little summary. Of more extensive and abstruse works there may be named Roby's "Latin Grammar," McMillan, London; Schneider's "Elementarlehre der Lateinischen Sprache," Berlin; Rapp's "Versuch einer Physiologie der Sprache," Stuttgart, and above all, Corssen's "Aussprache, Vocalismus und Betonung der Lateinischen Sprache," Leipzig.

tongues, and a means of oral communication with the scholarly world elsewhere; but it is also an undeniable cause of increased complexity and confusion in the pronunciation and prosody of the Latin itself, and of diminished ambition and delight in its systematic pursuit and use.

The Roman orthoepy must also be distinguished from the so-called "Continental Method," in behalf of which it is becoming common to put in a sort of apologetic plea — a plea which is mainly useful as a "confession of judgment" against our English-Latin, and an approximate demand for the Roman orthoepy, as the only system which, in linguistic truth and beauty, is at all worthy of the Latin language.

As a system, the "Continental Method," while, of course, superior to the English-Latin *mispronunciation*, has yet but slight claim upon American Latinists. It is, at best, a mere foreign importation, which it were unworthy our independent and advanced scholarship slavishly to accept. It is, besides, not so much one system, as five or six, each wholly local and dialectic. These, whether they are Italian, French, Spanish, Portuguese, German, are alike, only approximations to the truth, and so far, are simply confessions of the higher value of the truth entire. They are, moreover, in so many parts so diverse and conflicting as to be substantially an offense to each other, and an aggravation of wrong to the Roman orthoepy, the proper place of which they have usurped. Certainly, when we find these languages following their own analogies, and giving us such a diversity of mispronunciation as is exemplified below,* we may be pardoned for regarding the "Continental Method," as only *not so bad* as the English-Latin. Lastly, even though these methods

*Following the analogy of their own nature and use, these languages give us results like the following:

Lat.	Cē-lā-tim.	*Ital.*	Tcha-lāh-teem. *Rom.* Kāy-lāh-teem.
		Span.	Tha-lāh-teem (th soft).
		Fr.	Sa-lāh-teem.
		Ger.	Tsa-lāh-teem.
Lat.	Mā-gis.	*Ital.*	Mah-jese. *Rom.* Mah-gese (g hard).
		Fr.	Mah-zhese.
		Ger.	Mach-ese (ch. guttural).
Lat.	Quid pro quo.	*Ital.*	Kweed-pro-kwo. *Rom.* Keed-pro-ko.
		Fr.	Kee-pro-ko.
Lat.	Nā-tī-o.	*Ital.*	Nah-tee-o. *Rom.* Nah-tee-o.
		Fr.	Nah-see-o.
		Ger.	Nah-tsee-o.
Lat.	Vĕ-nī-ā-lis.	*Ital.*	Va-nee-ah-lese. *Rom.* Way-nee-ah-lese.
		Ger.	Fa-nee-ah-lese.

have the merit in common of giving substantially the Roman sounds of the *vowels;* they are, in other directions, nearly as wide from the truth as is the English-Latin; and with less excuse, since their recognition of the correct pronunciation of the Latin in the one direction, is proof of ability to make, at least a just approximation to the truth in the others.

In contradistinction from all this, the Roman orthoepy is a system distinct in character, broad in its use of dialectic analogies, simple and self-consistent in its principles, and — although to the many who have been left wholly in the dark by the silence of the Latin grammars on the subject, it may seem incredible — not surpassed by any thing pertaining to classic literature in the strength of its evidences. It has been affirmed, (and a careful examination of the evidence sustains the assertion,) that were the pronunciation of the French language to be lost, there exist no such ample means for recovering it as those at the command of the Latin tongue. If the scepticism of any is so strong as to verge upon a denial of this, let them bear in mind that there are accessible no less than five distinct valid and corroborative sources of knowledge to which appeal may be made in behalf of the Roman orthoepy. These are the four cognate Romanic tongues, the Italian, French, Spanish and Portuguese, containing indisputable remains of the ancient pronunciation; the writings of such ancient authors as Cicero, Quinctilianus, Victorinus, Longus, Terentianus, Scaurus, Priscianus, Donatus and others,* with their numerous references, both incidental and critical, to the sounds and powers of the Roman letters; specimens of ancient orthography from inscriptions and other sources, giving indication of the true sound or comparative value of certain letters; numerous transferred words, both in the Latin and in other languages historically related to it, as the ancient Greek, the Syriac, the Albanian, the German, and even the English, in which the Roman pronunciation has been phonetically defined or preserved; and the necessary lingual relations of the various elements to each other in speech. From all these sources the Roman orthoepy draws proofs most clear and conclusive in its own behalf. Besides this, its claims are in no slight degree re-enforced by the earnest efforts of the early English Latinists † in opposition to the growing

* Schneider, "Elementarlehre der lateinischen Sprache" quotes fifty ancient authors touching different points in pronunciation.

† Thus among the numerous protests of the grammars of the period against the English Latin, one published in the time of Hen. VIII, lays down this law for the teacher:

"*Ante omnia deterrendi sunt pueri ab iis vitiis quae nostro vulgo paene propria esse viden-*

English corruption of the Latin pronunciation; and by the almost unanimous testimony of the leading grammarians and commentators on the language, some of whom, the German * especially, are unsurpassed in sagacity and exhaustiveness.

In view of the simple *existence* of such varied and valid sources of evidence in behalf of the Roman orthoepy, it is simply surprising that any honest scholar, to say nothing of the zealous Latinist, tolerates the current pre-judgment of its claims, as embodied in that most superficial and sweeping of all grammatical dicta — "the ancient pronunciation of the Latin language has been almost wholly lost?"

The leading features of the Roman orthoepy, as determined by these sources of proof, can only be set forth here in brief.† They are as follows:

The Roman orthoepy is radically simple; each letter having invariably but one sound.

The distinction between long and short vowels is purely a matter of syllabic quantity; there being no change of position in the vocal organs, and no difference — as in English—in the essential quality of the so-called long and short sounds.

There are, with the exception of the generic equivalents *C*, *Qu*, and the Greek *Ch*, no duplicate letters for the same sound.

The vowels *A*, *E*, *I*, *O*, *U*, correspond in sound very nearly to the same letters in the Italian and other Romanic tongues. They may be represented by English elements as follows: *A* long by *Ah* or *A* in F*a*ther, short by *A*h or *A* in *A*rt; *E* long by *A* or *Ey* in Th*ey*, short by *A* or *Ei* in *Ei*ght; *I* long by *Ee* or *I* in Mach*i*ne, short by *Ee* or *Ei* in Conc*ei*t; *O* long by *O* as in T*o*ne, short by *O* as in *O*bey; *U* long by *U* as in R*u*le or *Oo* in F*oo*l, short by *U* as in F*u*ll or *Oo* in B*oo*t. *Y*, properly a Greek element, has nearly the sound of obscure *E* long, or a combination of *E* and *U*, like

tur." Cardinal Wolsey exhorts his Ipswich teachers in these words: "*Quorum os tenerum formare praecipua cura vobis sit, utpote qui apertissima et elegantissima voces pronunciatione, tradita elementa proferant.*" Milton, after urging the importance of a closer adhesion to the Italian sounds of the letters, declares emphatically that "*To smatter Latin with an English tongue is as ill a hearing as Law-French.*" Ainsworth, in his "Preface"(1746), complains of the "depraved sound" given after the incoming English fashion to the letters *C*, *G* and *T* before the vowels *E* and *I*; Phillips, in his "Method of teaching Languages" (1750), graphically describes the vicious pronunciation of *A*, *E* and *I* according to the English analogy by a pupil, and his efforts to correct it. Dr. Foster, in his "Essay on Accent and Quantity," shows the English use to be "grossly corrupt;" and Mitford, in his "Principles of Harmony in Language (close of 18th cent.), sets forth the absurdity of giving the eccentric English pronunciation to the Latin, and its incompatibility with Latin quantity.

* Justus Lipsius (1586); Schneider (1819); Rapp (1836); Corssen (1868).

† For a more extended view the reader is referred to *Haldeman*, *Richardson* and *Blair*.

the French *U*.* The sound of *O*, especially in connection with *R*, is rather more close than the English *O* long, resembling the French *O* similarly situated. *U* never has what the English pronunciation persists in giving it, the liquid sound of *U* as heard in F*u*sion. After *Q*, *U* was sometimes silent. *I*, like *U*, immediately before a short vowel in the penult, except in compounds, was mainly consonant.

The diphthongs are all long from necessity, and embody in their sounds the vocal substance of both the included vowels. Hence, except as blended or softened by natural coalescence in speech, the sounds of both vowels must be given in their pronunciation. Their sounds may be represented as follows: *Ae* (or *Ai* older form), equivalent to *Ah–ey* coalescent, had primarily the broad sound of the affirmative adverb *Ay*, in classic times softened or made close or nearly like *E–i*, sound of *Ay* in H*ay*, or *Ey* in H*ey; Au* has the sound of *Ow* in N*ow; Eu* composed of *A–oo* coalescent, is well represented by the sound of *Ew* in F*ew*, P*ew*, the *E* becoming almost consonant or like *Y*, as in *Eu*rope; *Oe* (older form *Oi*), literally equivalent to *O–a*, coalescent almost like *Wa*, but from the obscurity and closeness of the *O*, verging towards *A–ee*, has nearly the sound of the English obscure *A* in C*a*re, *E* in the French Prêtre, or German *Oe* in G*oe*the.† Incidentally it is remarked that *Ae* is the only approach in the Latin to our English *I* long, the sound of which has with characteristic perverseness been attributed to the vowel *I*. *Eu* is a combination of some difficulty, and appears to have originally resembled the French *Eu*. The

*The following tabular view of the vowel sounds will be more clear:

Ā	ah	Fāther — ārm.	Āles — cānus — dāma — rānus — tāmen.
Ă	ăh	Făr — ărt.	Ălĭă — cănis — dăbam — răpax — tămetsi.
Ē	ā	Fāne — thĕy,	Dēdo — fēnum — Hēbe — pēgma — strēna.
Ĕ	ă	Făte — ĕight.	Bĕne — fĕrax — hĕbĕo — pĕtra — sĕdile.
Ī	ēe	Flēe—machĭne.	Fīdō — elīdo — īdōlum — lentīgo — pīrata.
Ĭ	ĕe	Flĕet — pĭano.	Fĭdes — elĭcĭo — ĭdĕālis — lentĭpes — pĭpĕrĭs.
Ō	ŏ	Tōne — ŏwn.	Cōlo — dōnec — ŏdēum — pōcŭlum — rōrātĭo.
Ŏ	ŏ	Nŏte — ŏbey.	Cŏlor — dŏmus — ŏdĭum — pŏderes — rŏtātio.
Ū	ōo	Fōol — rūle.	Brūma — fūgi — hūmeo — plūrĭmus — rūgōsus.
Ŭ	ŏo	Bŏot — fŭll.	Consŭl — fŭgio — hŭmĭlis — plŭtĕus — rŭbrĭco.
Y	French u, or	As in mûr.	Cyclas—gyrus—pyrămis—sycămĭnus—typhus.
	(Obscure *e*)	As *Y* in *Y*outh.	Cygnus—Gyaros—pyrălis—synopsis—typus.

†The following tabular view may exemplify the diphthongs:

Ae (Ai)	Ah-ee, Ai.	Ay—Aisle.	Caesar, aether, gaesum, praedo.
Au (Ao?)	Ah-oo, Ow.	Now—Owl.	Aurum, causa, nauticus, raucus.
Eu	A-oo, Yu.	Few—Use.	Heus, neuras, neutiquam.
Oe (Oi)	O-a, (Way?)	(*French*, oeil?)	Coelum, oecus, proelium, poenatis.

Not strictly diphthongal:

Ei	A-ee	Pay-ee.	Rei, diei, spei.
Ui	Oo-ee (Wee?)	French, cuir.	Cui, hui, huic.

obscure character of *O* in *Oe* affiliates this diphthong to *Ae*, into which it often lapses, as the word *Caelum* for *Coelum*. *Ui* is not here noticed, since the *U* or *V* is consonant rather than vowel.

The sounds of the Roman consonants are, if any thing, more important than those of the vowels, inasmuch as they are not only subject to sharper dispute, but are in themselves the cardinal sounds, on which more especially hinges the tongue character of the Latin. With the exception of *C*, *G*, *H*, *J*, *Q*, *R*, *S*, *T*, and *V*, the consonants are pronounced very nearly as in the English.

Of those letters, *C* has always the hard sound represented by the English *K*, as in *C*ave, *C*one; *G* also is universally hard, as in the words *G*o, *G*et, *G*imlet; *H* is less strongly aspirate and separable as a letter than with us, and in accordance with no very definable rule, unless one of mere euphony, is often silent as in the English *H*onor, Ex*h*aust, May*h*em; *J* has always the sound of *Y* consonant, as in *Y*am, *Y*et; *Q*, chiefly important as the proper antecedent of *U*, has the sound of *K*; *R*, except after a weak vowel and at the close of a syllable, has the round or rolling sound, better preserved in the French than in the English *R*; *S* is always soft, as in our words *S*in, Hi*s*tory; *T* has invariably its proper and pure sound, as in the English *T*in*t*, en*t*ire; and *V* takes substantially the sound of the English consonant *W* as heard in *W*ine, *W*idow, Be*w*ail. The combinations *Ch*, *Ph*, *Rh*, and *Th*, correspond to their Greek antecedents, and have respectively the sounds of *C*, *F*, *R*, and *T* aspirate, the latter, when the *H* is not silent, having the slender sound of *Th*, as in the English words *Th*in, My*th*.* Incidentally it may be remarked, that in the earlier Latin, *B* sometimes took a sound approaching that of *P*, eventually becoming so far corrupted as to appear as *V* hard; the rougher aspiration of *H* belonged to the earliest form of the language, as its general suppression characterized the latest; *N* before *C*, *G*, *Q* and *H*, had the nasal sound of *Ng*, as in *Sing*, *Thank*, *Anxious*; *Q* in some words was unquestionably followed by silent *U*, and preserved the

* Tabular view of the consonants described.

C.K.	Kale, kill.	Cālo, căcālĭa, facio, cecini, auspiciis.
G.	Go, get.	Gero, cogitare, subegi, gessit, vigilantem.
H.	Hone, honor.	Homo, inhālo, pro-trăho, nunc hodie, a quŏ hoc ipso.
J. Y.	Yam, yes.	Jam, jacet, hujus, injuria, ejicerem, jejunitas.
Q. K.	Quay, pique.	Qui, que, quare, equitatum, ossequens.
R.	Rattle, roar.	Rōma, porta, torrentibus, strĕpĕrunt, furori.
S.	Same, sin.	Salutem, censuistis, confessio, dissensiones.
T. T.	Tone, title.	Tacita, diutius, hospitiis, conjurationem.
V. W.	Way, wo.	Vado, civis, vivéndum, severum, vigilantibus.
Ng., &c.	Hang, anxious.	Ancŏra, angĕlus, anquēro, ungŭla, jungo, sancio, sanxi fingo, finxi.

simple *K* sound of *Qu*, as heard in the words Pi*que*, Cin*que*; the assibilation of *T* before *I*, followed by another vowel, causing the two to slide into the English-Latin *Sh*, is evidently a late descent and corruption of the language; and *V* is in sound neither *F* nor *B*, as some have fancied, a confusion with regard to it, which has probably grown out of the fact that a peculiar closeness in the *W* sound, and the early presence of a slight or obscure *F* before it (the Digamma mystery), hardened or changed the true sound to crude or unfamiliar ears, and led both to its misrepresentation by the grammarians, and to its final corruption through obscure *B* or *Bv*, into *V* hard.*

Having thus summarily outlined the Roman orthoepy, there remains to be executed what many will consider the all-important work. "So far," says the reluctant or recalcitrant thinker, "all is mere assertion — good if true, and if true leaving us no option, but yet remaining to be proven." To the *proof*, then, at least so far as the limits of this essay will allow.

With regard to the Roman vowels, the proofs are not far to seek, if, indeed, since the claims of the "Continental" sounds of the vowels which are so nearly akin to them, are conceded, any argument be necessary. The first appeal is to the Italian language. It lies nearest in descent from the Latin. It is fast rooted in the original soil and stock. It is, hence, impossible that it should not have preserved, in comparative integrity, the original sounds of the Roman vowels. Whatever may be the fortunes of its consonants, the vowel sounds of a language are not easily affected by either disaster or decay. The solid skeleton remains intact, even when the softer elements which both clothed and gave it character, have perished. That this is the enduring character of the Roman vowels, is elsewhere evident. In all the other Romanic tongues — indeed, in almost every language with which the Latin came in contact — the same sounds are substantially preserved. The conclusion is almost irresistible.

But this is not all. There is the testimony of the ancients themselves. The Roman *A* is the conceded equivalent of the Greek *A*. That is described by Dionysius, as the most agreeable of all the vowel sounds, and as being "made with the mouth as open as pos-

* The views here taken of the Roman orthoepy are based on the certainty, that the only simple, self-consistent and assured system is to be attained by steering at once clear of both the earlier and the later Latin, the former being yet crude and unformed, and the latter having already begun to be variable, complex and corrupt. In falling too much under the influence of this later Latin, lies, perhaps, the secret of some of the misconclusions of the otherwise excellent treatise of Professor Blair.

sible." This accords perfectly with the description of the Roman *A*, as given by Victorinus and Maurus, who speak of it as produced "Rictu patulo," and by Capella, who says it was formed "Hiatu oris." With this description, both *A* in modern Greek, and *A* in the Italian agree.

The sound of *E* comes to us from a natural type. Varro identifies it with the radical sound of the bleat of the sheep, as suggestively represented by the combination *Bee*, in English *Beh* or *Bey*. This exactly agrees with the medial place in organic construction which the Roman *E* necessarily takes, as compared with *A* and *I*. Had we nothing of this, it would be enough that, in the ancient Greek, *E* was phonetically represented by *E* or *H*.*

I, the Roman vowel worst abused in our English-Latin, is represented by Victorinus as formed with the mouth nearly closed. A similar formation is suggested by the words of Capella, "*I* spiritus prope dentibus pressis." No vowel sound answers to this description but that of the long Italian *I*. Nor does any other sound consist with the opposition of Cæsar, Cicero and the grammarian Cornutus, to the corrupt use of *U* (or the Greek *Y*) for *I*, or the demand of Longus and others for the proper sound of *I* ("Tenuitatem I literae"), as opposed to the broad *E*, or "*E* plenissimum" mentioned by Cicero.

The original sound of *O* in the Latin, as in other early tongues, is indicated in the picture-form of the letter, as showing the position of the lips in uttering the sound. Dionysius speaks of the mouth as "rounded and the lips disposed in a circle" in forming the Greek *O*. That vowel has still among the modern Greeks the long *O* sound. That the Roman *O* was identical with it is clear from its common phonetic representation in ancient Greek by the Greek *O*, or Ω.†

Like *E*, the Roman U (or V as often written) was of imitative origin. If not exactly that, its sound was symbolized by sounds in nature. As in English we have *Moo* representing the lowing of the ox, so in Latin *Mu*gire signified to low or below. The sound of *U* could not then have been other than its well-known traditional long

* Egz. *Latin*, Geta. Tubero. secundus. Porsenna.
Greek, Γέτας. Τουβέρων. Σεκοῦνδος. Πορσέννας.
Latin, Aurunculeius. Zeno. Porsenna.
Greek, Αὐρουνκουλήϊος. Ζήνων. Πορσήννας.

† Egz. *Latin*, Porsenna. Postumius. Rhodanus. Cenomanni.
Greek, Πορσέννας. Ποστουμιος. Ροδανος. Κενομανοι.
Latin, Roma. Tubero. Zeno. Zelotypia.
Greek, Ρώμη. Τουβέρων. Ζηνων. Ζηλοτυπία.

N. B. In the last case we have a converse representation of the Greek *O*.

sound. This accords with Capella's account of it, as formed "with the lips not only rounded, but protruded;" and with the words of Victorinus, "V literam, quotiens enuntiamus, productis et coeuntibus labris efferemus." The language of both is almost identical with our own, descriptive of the forming of the English *U*, or *Oo* in *Hoop*, as recently given by Prof. Tyndal.* The Greeks unquestionably so understood the sound of the Latin *U*. They represented it by their own *Ou*. "Vice versa," the Romans represented the Greek *Ou* by their *U*.† Victorinus says expressly, *U* literam, quam nisi per *ου* conjunctam Graeci scribere ac pronuntiare non possunt." Could a philological argument be more conclusive?

The letter *Y* is of slight importance in the Roman Orthoepy. Even in the classical age, it hardly had a place in the Latin alphabet, Dionysius describes it as pinched or compressed in sound; and Capella makes it a labial. From Quinctilianus, it appears to have represented the Greek *Υ*. That letter was sometimes represented in Latin by *I* and at others by *U*. This shows it to have been a medial between *I* and *U*, or very nearly the equivalent of the French *U*, or better the German *ü*, a sound which easily degenerates into the long *I* sound often given to the Roman *Y*.

That the long and the short sounds of the vowels were different only in syllabic quantity, appears from the general simplicity of the Roman Orthoepy; from the ancient mode of duplicating the letter to indicate the long sound; from the absence in the ancient writers of any mention of a difference in quality; and the evident assumption of their identity by *Lucilius*.‡

Passing to the diphthongs. The fate of these is, of course, bound up with the fortune of the vowels. The sounds of those settled as *distinct elements*, determines from natural relations, their coalescent force in the diphthongs. Let any one, then, pronounce the two elements of the diphthong distinctly in succession, and then in quick conjunction, gradually, as in the case of *Ae* and *Eu*, reducing the sounds to a medial or obscure character, and he will have his own demonstration of the diphthongal sound.

More definitely now, with regard to the diphthong *Ae*. The

* Tyndal "On Sound," p. 200.

† Egz. *Latin*, Brutus. Corbŭlo. Populus. Nŭmitor.
Greek, Βροῦτος. Κορβουλων. Πωπουλους. Νουμητωρ.
Latin, Lugdunum. Sallustius. Superbus. Tertullianus.
Greek, Λουγδουνον. Σαλούστιος. Σουπερβος. Τερτουλιανος.

Inscriptions give, Suo, Σουω, Tuum, Τουομ, Laborum, Λαβορουμ, etc.

‡ "'A' primum longa, brevis syllaba, nos tamen unum Hoc faciemus, *et uno eodem que ut dicimus pacto*, Scribemus; pAcem, plAcide, JAnum, Aridum, Acetum, "Αρες, 'Αρες' Graeci ut faciunt." Cited by Scaurus.

grammarians, as may be seen from Quinctilianus, whose words are a type of all the rest, invariably allow it its full, broad sound of *Ai* (English *Ay*), in the early Latin.* That this broad sound, before the fatal corruption of the diphthong into mere *E* long, as it commonly appears in the medieval Latin poetry,† was simply softened or obscured, so as to more nearly resemble our English *Ay*, as often spoken, or *Ai* in the French *Raison*, appears clear from Varro.‡ The former, or original broad sound, also finds full verification in its phonetic representation in other tongues.§ From that the closer sound of the Roman diphthong follows necessarily from the simple law of superior softness in the more refined native source.

The proof in behalf of the Roman *Au* is varied. There is, as in the case of some of the vowels, original onomanatapoetic evidence. Alike in the *Au* of the Greek *βαυζω*, and the Latin *Baubor*, and in the *Ou* of the English *Howl* and the colloquial *Bow wow*, as representative of the barking of the dog, is there a direct picturing of the true sound. That sound is also clearly traceable in the derivative Latin tongues. The Portuguese preserves it in comparative purity, alike in *Au* and *Ao*, as in *Pau* and *Pao*. It is, in its necessary elements, discernible even in the disjointed, dissyllabic *Au* of the Italian, and in its degenerate form *Ao*, as in *Aosta* (Augusta) and *Timao* (Timavus). Directly suggestive also is this *Ao*, of both the *O* and the *U* into which, in the middle Latin, *Au* was corrupted. Both point back, through the natural relations of the elements, to the full pure sound, which was supplanted only through the prominence gradually assumed by the last vowel which fell on the ear. Were there no other proof it would more than suffice that both Greeks and Romans who had the same

* Ae syllabam, cuius secundum nunc *E* literam ponimus, varie per *A* et *I* efferebant; quidam semper ut Graeci, quidam singulariter tantum, cum in dativum vel genitivum casum incidissent, nude *pictai vestis* et *aquai* Vergilius amantissimus vetustatis carminibus inseruit. — *Quinctilianus.*

† Jucundare, plebs fidelis,
Cujus Pater est in cælis. *Adam of St. Victor.*
Recordare, Jesu pie,
Quod sum causa tuae viae;
Ne me perdas illâ die! *Thomas of Caelano.*

‡ In pluribus verbis *A* ante *E* alii ponnut, alii non * * * ac rustici *Pappum Mesium*, non *Maesium*. In Latino rure *Hedus* quod in urbe, ut in multis *A* addito *Haedus*. *Varro.*

§ *Egz.* *Latin* — Caesar, Caesarea ad lutram, Caesaris verda.
German — Kaiser, Kaiserlautern, Kaiser werden.
Latin — Caesarea. *Latin* — Celaenae, Caecias, Baiae.
Syriac — Kaisariyeh. *Greek* — Κελαιναί, Καικιας, βαιαι.
Greek — Καισάρεια.

diphthong — the sound of the Greek *Au* we know positively — heard it alike, each representing the other by its own.*

Of the diphthong *Eu* little need be said. It is of no very frequent occurrence. Its elements are separately unmistakable. It is not known to have passed in the later Latin into *E*. Its occasional displacement by *U* fixes its dominant sound. The modifying force of the *E*, as nearly equivalent to *Y* consonant is, therefore, clear. Its sound, as indicated, has been preserved in the Portuguese *Eu* and *Eo*, as in *Deus* and *Deos*, in which it appears as a monosyllable, taken with the *S*, resembling the English *use*.

Greater difficulty attends the verifying of the sound of *Oe* (old form *Oi*), as has already been hinted. Taking *E* as its dominant sound, the modifying force of the obscure *O* would give a combination similar to that found in the English word *way*. *Proelium*, as contracted from *Pro-ilium*, is suggestive of the same. This, also, finds some support in the Portuguese *Oe* and *Foe*. . The further subduing of the *O*, which seems to be undoubted, left, of course, only the obscure sound of *E*, as already indicated.

In passing to the substantiation of the consonant sounds, the first appeal is naturally to the analogy of the Romanic tongues. More caution, however, must be exercised here than was necessary in the case of the vowels. Like the rounding and enforming flesh, the consonants, as exterior and more susceptible to alien influence, less easily, amid national and linguistic accidents, hold intact their place and character. The languages of Italy, France, Spain and Portugal, although distinctly Romanic in descent, must not only contain strong traces of the native dialects, but in whatever in them was originally Latin, must have been greatly affected by the various tongues with which they were deluged through the barbarian inroads which overthrew the Empire. Hence, only so far as a general agreement argues a substantial preservation of the consonant sound, can their testimony be valid? Failure, however, through the want of such agreement, is, in view of the existence of so many other lines of proof, comparatively unimportant.

Turning to those other lines of proof, and taking up the mooted letters in detail, the hard or *K* sound of *C* is beyond dispute. It is evinced in no less than *seven* different directions. *C* among the Romans was like *G*, a guttural — a thing utterly incompatible with

* Egz. *Latin*, Claudius. Aulerci. Augustus. Faustulus.
Greek, Κλαύδιος. Αὐλιρκιοι. Αὔγουστα. Φαυστυλος.
Vice versa, we find,
Greek, Αυλις. Αυγειας. Παυσανιας. Καυσια. Αυτολυκος.
Latin, Aulis. Augias. Pausanias. Causia. Autolycus.

its ever being a mere sibilant. For, in the early Latin, *C* and *G* were used interchangeably, as in *Leciones, Legiones; Macistratos, Magistratus: Pucnando, Pugnando: C*, like *G* before *S*, produced *X*, as in *Pax* from *Pac*, and *Rex* from *Reg:** in syncopated or derived words it had, beyond doubt, the hard or guttural sound never produced by a change from a palatal or sibilant, as in *Sanctum* from *Sancitum*, *Fac* from *Facio*, *Hicce* and *Hiccine* from *Hic*, *Sēcus* from *Sĕcius*, *Cēpē* from *Căpĭo*, *Audăcter* from *Audaciter*, and many others. This guttural character of *C* is also shown by its early supplanting of the letter *K*, the latter retaining its hold only as an abbreviation, as in *K* for *Caeso*, and *Kal* for *Calendae*, and in a few proper names — a thing inconceivable, except as they were identical in sound. This identity of sound between *C* and *K* is, furthermore, expressly affirmed by the Latin grammarians, and the use of the latter denounced as superfluous.† What, too, other than proof as conclusive as it is curious, is to be found in the relation of *C* to *Qu*, as given in the remark of Nonius, "Illi*ce*re est proprie illa*qu*eare;" and in the following instance of the figure *anominatio:* "Reliqui *acus acias*que ero atque erae nostrae," from Titinius, and this other from Atilius: "*Cape caede*, Lyde, *come conde?*"

What but a practical demonstration of the true sound of the Roman *C* is to be found in its acknowledged equivalence, in its own times, to the Greek *K?* Why, if this were not the fact, does Suidas style the *C* worn on the shoes of the Roman senators, "*Το Ρωμαικον καππα*;" and why were the two letters used by the two peoples, as phoneticaly representative of each other?‡ And, lastly, it is in evidence that other nations so heard the sound of the Roman *C*, in that they represented it by their own corre-

* "Ante Augustum *cs* vice x." *Isidorus.*

"K duplicem loco *c* et *s*, vel *g* et *s* postea a Graecis inventam, assumpsimus, ut *dux, ducis*; *rex, regis.*" *Priscianus.*

† "Nam *K* quidem in nullis verbis utendum puto, nisiquae significat, etiam ut sola ponatur. Hoc eo non omisi, quod quidam eam, quotiens *A* sequatur, necessariam credunt, *cum sit C littera, quae ad omnes vocalis vim suam perferat.*" *Quinctilianus.*

"Et *K* quidem penitus supervacua est, nulla enim ratio videtur, cur *A* sequente, *K* scribi debeat." *Priscianus.*

"Quamvis in varia figura et vario nomine sint *K* et *Q* et *C*, tamen, quid unam vim habent tam in metro quam in sono, pro una litera accipi debent." *Idem.*

"*K* supervacua est, ut supra diximus; quae quamvis scribatur nullam aliam vim habet quam *C*. *Idem.*

‡ *Egs.* *Latin*—Căto, Cĭcĕro, Caesar, Cĕlsus, Plăcentiă, Scĭpĭo.
Greek transfer—Κατων, Κικέρων, Καῖσαρ, Κέλσος, Πλακεντια, Σκιπιων.
Greek—Ωκεανος, Κιλικία, Κιντίας, Κέκροψ, Κέρασνος, Λάκαινα.
Latin transfer—Ocĕănus, Cilĭcĭa, Cĭnĕas, Cĕcrops, Cĕrăsus, Lăcaena.

N. B.—Observe the equivalence of the Latin *U* and the Greek *Ου*, in *Cerasus* and Κέρασους, and the Latin *Ae* in *Caesar* and in the Greek *Αι*, in *Lacaena*, etc.

sponding *K*, or *K* sounding letters.* To all of which the Roman Latinist will thankfully append, as an *eighth* proof, the amiable concession of the English-Latin,† "In the pronunciation of the ancient Romans, the hard sound of *C* and *G* seems (!!!) to have been retained in all their combinations."

In behalf of the Roman sound of *G*, detailed proof is hardly needed. Its fortunes are closely interwoven with those of the letter *C*.‡ If *C* was guttural, *G* was only more so. So the grammarians describe it.§ They give us no trace whatever of a soft sound. It is mode, simply the medial of the *K* mutes. Besides this, as in the case of *C*, the hard sound of *G* is the only one at all consistent with the relations of the elements, or with a natural vocalization in derivatives, as in *Lego*, *Lex*, *Legis*, *Legi*, *Legitum*, *Lectum*, and others. This is still more clearly seen in the acknowledged relation of *X* to *Gs*, as well as to *Cs*, as in case of *Rex*, *Regis*, *Pix*, *Picis*.¶ The same holds equally true of the nasal assimilation of *N* and *G*, as well as of *N* and *C* before *E* and *I*, as in *Angelus*, *Ancilla*, *Ingenuus*, *Longinus*, and others. With this nasal force, as any one may see, the soft sound is wholly incompatible. The hard sound of *G* is, furthermore, closely preserved in the phonetic transfer of words from the Greek ‖ and the Celtic ** found in the Latin; and in Latin words †† traceable in the French and the German. A

* *Egz.* *Latin* — Caesar. *Latin* — Caesarea. *Latin* — Caesarea ad lutram.
German — Kaiser. *Syriac* — Kaisariyeh. *German* — Kaiserlautern.
Latin — Caesaris verba. *Latin* — Celbisburgus. *Greek* — Κίθαρα. *Latin* — Cithara.
German — Kaiserwerden. Kylbourg. *Italian* — Chitarra (Ch-K.)

Compare, also, the following:
Latin — Cellarium, Carcer, Cicer. *Latin* — Ocelum.
German — Keller, Kerker, Kicher. *French* — Exilles.
Latin — Lucerna, Fascia. *Latin* — Alce Alces, Scinkus.
Gothic — Lukarn, Faskja. *English* — Elk, Skink.
Latin — Facies, Pace, Piscis, Capae. *Latin* — Cygnus. *Greek* — Κυκνος.
Albanian — Fachie, Pache, Pische, Kepti. *Persian* — Quqnus.

† See Andrew's and Stoddard's Lat. Gram., p. 13, letter C, "Remark."

‡ Antiqui per *C* literae formam nihilominus, *G* usurpabant, *Acetare* dicebant pro *Agitare*; *Prodigia* quod *Prodicant* futura, permutatione, *G* litarae, etc., *Festus*.
"Pro agro *Gabino*, dicebant *Cabino*; pro *Lege*, *Lece*; *Acna* pro *Agna*," etc. *Victorinus*.
"*Camelum* alie dicunt, alii, *Gamelum*. Negotium dictum est quia *Necotium*. *Scaurus*.

§ "Inter *C* sine aspiratione, et cum aspiratione est *G*." *Priscianus*.
"*C* etiam et *G*, ut supra, sono proximae, oris molimine nisuque dissentiunt; nam *C* reducta introrsum lingua hinc atque hinc inter molares surgens, haerentem intra os sonum vocis excludit; *G* vim prioris pari linguae lapsu palato suggerens, lenius reddit. *Victorinus*.

¶ "Quippe ante X literam, quae postea in compendium inventa est, *Rex* per *Gs* [Regs], item *Pix* per *Cs* [Pics] veteres scribebant. *Victorinus*.

‖ *Egz.* *Latin* — Geryon. *Greek* — Γερυων. *Latin* — Gigas. *Greek* — Γιγας.
Greek — Ονιργιλιος. *Latin* — Virgilius.

** *Latin-Celtic* (Celtic *G* hard) — Tulingi, Cingetorix, Cogidunus.
" *British* " " — Vortigern, Durotriges.

†† *French* — Guines from Gesna, Bigorre from Bigerrensis Ager; and *German*, Bregentz from Bregentium [*Haldeman*.]

passage* finally can be cited which shows that the Latin *G* had the sound of the Greek *Γ*, which was of course hard. Finally, there is not the slightest indication to be found among the ancient grammarians that the letter ever had the soft sound of our English *G*.

With regard to the letter *H*, nothing is more natural, seemingly nothing more satisfactory than the remark: "The Latin *H* was the same with the English H." So far as its quality in aspiration is concerned, this is substantially true. Priscianus indicates a close resemblance between it and the *spiritus asper* of the Greek.† Victorinus describes closely its formation.‡ Longus formally sets forth its relation to the vowels both as antecedent and subsequent.§ But the solution of the real difficulty is not here. When was it aspirate and when was it silent? Here, as in the case of the English *H*, it is not easy to determine the right by either rule or record. The only principles, then, serving as a guide are these. The rougher and more frequent aspiration of the *H* was of course characteristic of the earlier and ruder tongue. In the Latin of the middle period, a softer aspiration and a more frequent suppression must be looked for. The occurrence in even early inscriptions and manuscripts of both forms, as *Harundo, Arundo, Harena Arena, Hordeum Ordeum*, and others,‖ argues a refined tendency to suppression. The same tendency would result from the reaction of the cultivated Roman mind against antiquated or rustic excess in the use of the aspirate.¶ That Cicero objected to the use of the *H* in *Triumphus, Pulcher, Carthago* and *Cethegus*, implies a decided feeling against *needless* aspiration. The entire loss of the distinct aspirate in the Romanic tongues, while in its universality doubtless a corruption, is still incompatible with its original prevalence in the Latin. Add to this the fact that in most cultivated tongues, especially those of Austral sonorousness and sweetness, the very

* Cum dico LEGE, in his duabus syllabus, aliud Graecus, aliud Latinus *intelligit*. *St. Augustine.*

† "*H*, ἑκατον. Vetustissimi enim quique Graeci pro asperatione, *H* scribebant, quam habebant HECATON in principio." *Priscianus.*

‡ "*H*... profundo spiritu, anhelis faucibus, exploso ore fundetur." *Victorinus.*

§ "Nunc vero et ante Vocalem, et post Vocalem sonat sic, quo modo est alia syllaba *ca* et alia *ac*, et alia *ba*, alia *ab*, sic alia *ha*, alia *ah*." *Velius Longus.*

‖ See *Corssen*, vol. I, p. 50, sq.

¶ See *Quinctilianus*, Lib. I, c. 5, § 19, sq.—[Aedos, Ircos, Triumpis, etc.]

Also, *Catullus*, Epigram LXXXIV. [Chommoda, Commoda; Hinsidias, Insidias; Ionios, Hionios.]

Also this: "*H* literam sive illam spiritum magis quam literam dici oportet, inserebant eam veteres nostri plenisque vocibus verborum firmandis roborandisque, ut sonus earum esset viridior vegetiorque.....Sic '*lachrimas*,' sic '*sepuchrum*,' sic '*ahenum*,' sic '*vehemens*,' sic '*incolare*,' sic '*helluari*,' sic '*halucinari*,' sic '*honera*,' sic '*honustum*' dixerunt; *Gellius.*] showing clearly in favor of the suppression of the *H*.

necessities of oral fullness and fluency compel the suppression of *H* aspirate, wherever the letter suffices to indicate greater force in the associate vowel, or is incoalescent with the adjacent consonant, and the rule is comparatively clear.

The position of the English language with regard to the Roman *J*, or *I* consonant, is characteristically perverse. It is neither in harmony with the Romanic corruptions of the letter, nor with its own Saxon or Gothic allies. Practically at variance with almost every alphabet but its own conglomerate, its treatment of the element wherever found, has been simply atrocious. The sacred names of our holy religion, not only those of patriarchs, prophets and apostles, but even the "Ineffable Name," and the "Name above every other," * so securely guarded against distortion, as it would seem, by a threefold transmission in their initial verity through the Hebrew, Greek and Latin, have been the special victims of its corrupting touch. Stranger still, gross enough to be its own condemnation, the wrong has been tamely condoned by even the Christian pulpit, until hardly the chancel and the altar dare reverently return to the hallowed utterance, which has been embalmed in the sacred tongues and handed down through the ages.

Nevertheless, the true sound of the Roman *J* or *I* consonant — the only form known to the Romans — is easily verified, and by proofs the most ample. Not only is the sound assigned, the traditional one, but there is not the slightest recorded indication that the soft English *G* sound was ever even thought of. With the latter sound, also, the quite common interchange of *I* with *U*, as in *Lacrumae*, *Lacrimae*, *Maxumus*, *Maximus*,† is wholly incompatible. *U* obscure might supply the place of an impure *I*, but not that of *G* soft. Furthermore, *J* was not a Roman letter. It is a comparatively modern device. Its influence on Latin pronunciation has been simply mischievous. The original character, *I*, was unmistakable in its sound. It was simply that of *I* (as English *E* long), coalescent with the succeeding vowel.‡ Its exact counterpart, both in relation and force, is found in the English *Y*, as for example, in *Yam* (*E-am*), or the Latin *Iam* (*E-am* or *Yam*). With this accords the express testimony of the ancients.§ They also affirm that, after

* *Hebrew* — יְשׁוּעַ. *Greek* — Ιησους. *Latin* — Iesus and Jesus. *English* — Jesus (Dgesus !)

† "*Lacrumae* an *lacrimae*; *maxumus* an *maximus*, et si quae similia sunt scribi debeant, quaesitum est," etc. *Cornutus.*

‡ "Atqui littera *I sibi* insidit, *coniicit* enim est ab illo *iacet*." *Quinctilianus.*

§ "Et *I* quidem modo pro simplice, modo duplici accepitur consonante; pro simplice, quando ab ea incipit syllaba in principio dictionis posita subsequente vocali in eadem

a vowel and syllable preceding, and before another vowel in its own syllable, as in *Aio*, *Maior*, *Eius*, *Huius*, *Veii*, *Pompeii*, *I* was a consonant, or performed the office of a double consonant ("*Pro duplici accipitur consonante*").* Beyond all this, in itself conclusive, there are no less than three lines of evidence of an analogical character. This *Y* sound of the Roman alphabet can be traced with absolute certainty from the Hebrew י (Jod), through the Greek *I* (Iota), to the Roman I (I consonant), and the *J* of the modern Latin.† A close analogy in sound is also discoverable in the corresponding element in words found in the Sanscrit, Gothic, German, English, Latin and Spanish languages.‡ And, lastly, the identical sound has been phonetically preserved in the same words in Latin, Hindu and English; § and in original words from the Latin still existent in Italian and Spanish.‖

The proper sound of *Q* needs little discussion. Whatever seeming doubt attends it, belongs rather to the *U* consonant following it. The identity of *Q* with *K* is even more clear than that of *C* and *K*. It is fully attested by the ancient writers.¶ Its ready interchange with *C*, as in *Quotidie*, *Cotidie*; *Quum*, *Cum*; *Coqui*, *Coci*; *Sequtus*, *Secutus*; *Coquus*, *Cocus*; Cicero's use of *Coque* (vocative of Coqus), and *Quoque*, as similar in sound, in the witticism preserved in Quintilian; and the Greek representation of *Q* by *K*, as in *Κόαδοι Quadi*, *Ἀκύλας* for *Aquila*, and many others, are themselves quite conclusive. So complete was this equivalence of *Q*, *K* and *C*, that some writers scrupulously avoided the use of *Q*.** That *Q* has

syllaba, ut *Juno*, *Jupiter*, pro duplicem autem, quando in medio dictionis ab ea incipit syllaba post vocalem ante se positam subsequente quoque vocali in eadem syllaba ut *maius*, *peius*, *eius*, in quo loco antiqui solebant geminare eandem *I* literam et *maiius*, *peiius*, *eiius*, scribere, quod non aliter pronunciare posset, quam si cum superiore syllaba prior *I* cum sequente altera proferretur ut *pe-ius*, *ei-us*, *ma-ius*." *Priscianus.*

* "Sicut etiam Ciceroni placuisse *aio*, *Maia* neque geminata *I* scribere quod si est aliam iungetur ut consonans. *Quinctilianus.*

† *Hebrew* — יוֹסֵף. *Greek* — Ιωσηφ. *Latin* — Ioseph (or Joseph). *English* — Joseph.

Hebrew — יָפוֹ. *Arabic* — Yaffa. *Greek* — Ιοππη. *Latin* — Ioppe (or Joppe). *English* — Joppa.

‡ *Sanscrit* — Juvan. *Gothic* — Jungs. *German* — Jung. *English* — Young. *Latin* — Iuvenis.

Sanscrit — Juga. *Gothic* — Juk. *German* — Joch. *English* — Yoke. *Latin* — Iugum. *Spanish* — Yugo.

§ *Latin* — Iomanes. *Hindu* — Jamuna (Yamouna). *English* — Jumna.

‖ *Spanish* — Ayunar, Yacer, Yactura, Yuxtaposicion.

Latin — Jejunare, Jacere, Jactura, Juxtapositio.

Spanish — Yambigo, Yugular, Conyugal.

Italian — Jambico, Jugulare, Conjugale.

Latin — Iambicus, Iugularis, Coniugalis.

¶ "Quamvis in varia figura et vario nomine fuit *K* et *Q* et *C*, tamen quid unam vim habent tam in metro quam in sono, pro una litera accipi debent." *Priscianus.*

** "Licinius Calvus *Q* litera non est usus." *Victorinus.*

Nigidus Fidilius made no use of either *Q* or *K*.

this *K* sound in all the cognate tongues, is too well-known to need mention.

With regard to the sound of the Roman *R*, there is little to be urged. The direct testimony of the ancient writers is scanty. This, however, argues directly for the stronger, or rolling sound. Any important presence in the best usage, of the weak or flat *R*, would have led to more frequent criticism of the rolling *R* as rustic or antiquated. Lingual necessity will, of course, require the former, or flat sound at the end of words, especially when the antecedent vowel is weak, as in *Acer*, *Jubar*, *Pater*, *Moeror* and *Satur*. Elsewhere, the direct testimony is in favor of the stronger or rolling sound,* as found in *Roma*, *Arma*, *Porta*, *Hirrio*,† *Horrendus*, *Frango*, *Rumpo*, and the like. The prevalence of the stronger sound in the Romanic languages has, moreover, no slight weight as evidence. By no natural law of derivation or refinement can they be supposed to have roughened an *anterior soft* sound. Their tendency could only have been to soften the rough or rolling sound of the Roman *R*, which must, consequently, have been even more forcible than their own.

As it regards the true sound of the Roman *S*, there can be little doubt that it was the sharp *S* of our word, *This*. The hard, or *D* modification, as found in *Z*, could not have occurred, except at the end of words; and when preceded by *B* (and, perhaps, *N*), and there, not so much from a change in its own quality as from a colloquial carrying onward of the hard sound of *B*. The ancient writings contain no allusion to this *Z* sound as characteristic of the Roman *S*. The sharp sound has tradition wholly in its favor. The doubling of the *S* occasionally observed in the time of Cicero, as seen in *Caussa*, *Aussus*, *Divissio*, *Odiossus*, etc., is also a plea in its behalf. This doubling was evidently an effort — not as some have supposed to secure the *Z* quality, but only to preserve the distinctness, or increase the sharpness of the *S*, as would the addition of *s-s* to our word, *Hiss* (Hiss-s-s). This view is certainly sustained by the language of the grammarians themselves.‡ The preservation of this sharp sound in the Spanish tongue, which was

* "*R*, quae vibratione vocis in palato, linguae fastigio fragorem tremulis ictibus reddit." *Victorinus.*

† See this language relative to the letter *R*: "Sonat hic de nare canina littera." *Persius.*
Also the following, concerning the word *Irritatus*: "Ducitur autem verbam a canibus, qui restrictis dentibus hanc literam *R* imitántur." *Donatus.*

‡ "*S* vero geminata vocis sonum exasperat." *Longus.*
"Quid? quod Ciceronis temporibus paulumque infra, fere quotiens *S* littera media vocalium longarum vel subiecta longis esset, geminabatur, ut *caussae*, *cassus*, *divissiones*." *Quinctilianus.*

farther removed from the assibilating influences that in the Italian corrupted both *S* and *C*, argues in the same direction. If any thing more were needed, it were enough to suggest that the introduction of *Z* into the later Latin, to represent the Greek *Z* (Zeta), in certain imported Greek words, and the confusion which pervades the attempts of the ancient grammarians to determine its force, shows that the Roman *S*, neither single nor double, was any proper equivalent for it.

The case of the Roman *T* is similar to that of *S*, in admitting of a comparatively ready solution. That it always had its pure sound —never properly lapsing into *S*, is quite generally conceded. Its congenital relation to *D*, and the tendency of *D* final to subside into *T*, as in *Haud*, *Haut*, argue directly for the pure sound. There is no proof that, in the early Latin, it had any other sound, nor can any other evince any consistent harmony with the Latin of the middle period. That it should have preserved its hard sound in the Italian, in which it came to be so often supplanted by *Z*, and in which *C* became so assibilated and corrupt, is a significant fact. Its tendency, in the later Latin, when combined with *I* before another vowel, to lapse into *Ts*, would appear to be of northern origin, and must be considered a part of the approaching debasement of the language.

In reaching the letter *V* or *U* consonant, we come to the "Debatable Ground" in the Roman orthoepy. This results from the uncertainty attaching to the force of the ancient Digamma or Eolic *F*, in the early Latin; to the confusion arising from the occasional use of the Greek *B* in representing the Roman *V*, and to the seeming lapse of the Roman *V* into obscure *B* in the Spanish.* But, notwithstanding this, the proofs adducible in behalf of the *W* sound as given in the preceding scheme, and as indeed generally accepted

*While comparatively foreign to the present purpose, it may be suggested whether a solution of the difficulty might not be found in an obscure combination of these sounds which, through an imperfect articulation or ambiguous hearing, would easily, in different cases, leave only the impression of the different simple sounds dominant. Combine the *F* sound severally with the obscure *B* and *V*, so as to form a *Bf* and *Fw*, and the Greek, hearing *Bfeii* and *Helbfetia* for *Veii* and Helvetia, would naturally, from the weakness of the *F*, and his inability to represent it, give them as Βηιοι and Ἑλβητια, especially if the *B* were at all forcibly uttered, as the Roman himself, hearing *Fweii* and *Helfwetii*, would, if the *V* were given obscurely, with a strong aspiration of the *F*, accept the words as *Veii* and *Helvetii*; while if, contrariwise, the *F* were obscure, digamma like, and the *V* or *U* consonant strong, he would hear rather *Weii* and *Helwetii*. As to doubts occasioned by this double position of the *F*, let it be borne in mind that the same thing is true of the constituents of the *Z*, the grammarians giving both positions, viz.: *Sd* and *Ds*. And this hypothesis, it is submitted, will, as none others can, account at once for the confusion of the early grammarians in attempting to define the powers of the three letters; the occasional representation of the Roman *V* by the Greek *B*, as well as *B* in the Spanish; and the evident predominance of the consonant, or *W* sound as given to it by the Romans.

by all but English Latinists, are too numerous and too conclusive to be set aside.

To begin with, there is not only no direct evidence that the hard labial *V* sound, corresponding to the cognate soft labial *F*, existed in the Roman orthoepy; but the ancient grammarians in representing the latter as formed "with the lower lip and the upper teeth," give no parallel description of the formation of *V*. But this would have been both natural and inevitable, had it possessed any such cognate hard sound. Furthermore, in classifying the labials, they include *B*, *P*, *F* and *M*, but not *V*, generally confounding the latter with *U*. This last is simply identifying the *V* with *U* consonant. With this perfectly agrees the lingual relation necessarily existing between *U* vowel (*Oo*) and *U* consonant, or V (W), as may be seen by speaking the elements, as in our word, *Waste*, first separately, *Oo-aste*, then in quick coalescence, *Waste*. Exactly accordant with this, also, was the frequent Roman use of *U* and *V* as interchangeable.* There is also direct indication that the difference between the two was scarcely appreciable.†

Of this scarcely appreciable difference, it is curiously in proof that, according to Cicero, M. Crassus, hearing a vendor of figs cry "*Cavneas*" (*Cauneas*), and understanding him to say: "*Cave ne eas*" (*Beware how thou goest*), took it for an ill omen, a misapprehension impossible but for the similarity of *U* and *V*. Of this similarity — identity, as far as the same element as vowel and consonant can be identical — and, consequently, of the prevalence of the *W* sound of *V* among the Romans, the almost universal representation of that letter among the Greeks by their own Υ or *Ου*, amounts to a demonstration.‡ Hardly less significant is the preservation of the same sound in many English words, either as derivatives, or as of kindred origin with the Latin correspondents.§

**Egz.* Tenuior, Tenvior; Quattuor, Quattvor; Genua, Genva.
Extenuantur, Extenvantur; Evoluam, Evolvam.
Dissoluo, Dissolvo; Pervoluent, Pervolvent; Tenuia, Tenvia.
In derivatives. Solvo, Solutum; Caveo, Cavitum, Cautum; Navita, Nauta; Plovo (ancient), Pluo; Flovo, Fluo, etc.

† "Antiqui — *ignorantes* eam" (*U*), "praepositum Vocali, consonantis vice fungie poni pro ea litera quae sit *F*." *Scaurus.*

‡ *Egz.* *Latin* — Vaccaeos, Servilius, Flavius, Helvetia, Sequani.
Greek — Ουακκαιος, Σερουιλιὸς, Φλαουίος, Ἑλουητια, Σηκουνοί.
Contrariwise, compare:
Greek — Οἶνος, Οἶκος.
Latin — Vinum, Vicia.
Also compare with these.
English — Wellington, Victoria.
Modern Greek — Ουελλιγγτων, βικτοριὰ.

§ *Egz.* *Latin* — Vallum, Vado, Vanno, Vasto, Vinum, Vicus.
English — Wall, Wade, Winnow, Waste, Wine, Wic (village).

Aside from the proper sound of *V* or *U* consonant, the question of its suppression after *Q*, as being somewhat in dispute, is of consequence. There is evidence both for and against. It is in evidence against, that the *Q* was retained in the Roman alphabet, notwithstanding its confessed superfluity as representing a *K* sound. This was doubtless due to its use as fixing the consonant force of *U* following. The multiplied proofs just given, that *U* consonant, or *V*, had the *W* sound, are also just so far evidences that it was not, in general, suppressed after *Q*. There was no lingual necessity for its suppression in this case, since the *W* sound is not only possible after that of *Q*, but is thoroughly consonant with it. The opposite is true of the alleged *F* or *V* sound. Furthermore, the evidence, from the direct testimony of the grammarians, is, for the major part, against its suppression.* The prevailing use in the Greek of *Υ*, *Ου*, or *Οι*, in representing the Roman *U* consonant, or *V* following *Q*, is decisively against it. Besides, in the Latin itself, if this element were silent after *Q*, *Cur* could not be consistently derived from *Quare*, Con*cutio* from *Quatio*, *Cujus* from *Quis*; as well as *Cuatro* in the Spanish, from *Quatuor*, and *Agua* from *Aqua*. Finally, it is not without weight, that, despite the tendency in the Romanic languages to eliminate the *U* consonant sound after *Q* — a result accomplished in the French and Portuguese — it has maintained its place in the Italian, † and, except in *Que* and *Qui* — in those even in certain cases — in the Spanish. Taking it all in all, the weight of evidence is in favor of its general retention, and of making *Qu* for the most part equivalent to *Kw*.

On the other hand, it may reasonably be urged in favor of the limited or exceptional silence of *V* or *U* consonant after *Q*, that in certain cases *Qu* and *C* are treated as equivalent; ‡ there is partial

Latin — Vidua, Veho, Volvo, Vermis, Vespa.
English — Widow, Weigh, Wallow, Worm, Wasp.

Note also the curious transfer of the English *Berwick*, to the Latin as *Bervicium*, showing the Roman *V* as English W.

* "*V* literam Digamma esse — debemus advertere — in eo, quod est QVIS." *Longus.*

"Duras et illa (sc. Q) syllabas facit, quae ad conjungendas demum subjectas sibi vocales ese utilis, alias supervacua, ut *equos* haec et *equum* scribimus; cum etiam ipsae hae vocales (i. e. *uo* and *uu*) duae *efficiant sonum, qualis apud Graecos, nullus est, ideoque scribi illorum litteris non potest.*" *Quinctilianus.*

"Q literae aeque retenta est — quia cum illa *V* litera conspirat, quoties consonantis loco ponitur, id est, pro *vau* litera, ut QVIS, QVALIS." *Scaurus.*

"Nos vero, qui non habemus hujus vocis (i. e. Digamma) — notam in ejus locum quoties una vocalis, pluresve junctae unam syllabam faciunt, substituimus *V* literam ... At cum (*V*) praeponitur vocali, tunc accipitur pro consonante, ut est ANGVIS, EXTINGVIT LINGVA, PELVIS." *Victorinus.*

† *Egz.* Quaini, Querno, Quercino, Quagliati, Quieto, etc.

‡ *Egz.* Neque, Nec; Quum, Cum; Quotidie, Cotidie; Equus, Ecus; Colliquias, Collicias; Sequutus, Secutus; Coquus, Cocus, and such derivatives as *Coctum* from *Coquo*. Compare also Cicero's punning use of *Coque* (voc. of *Coquus*), and *Quoque* (adv.), as reported by Quinctilian.

evidence that it was so regarded by the ancients; that in some combinations it must have been almost a colloquial* or poetical† necessity, and that the entire loss of the *U* following *Q* in a language so thoroughly *Romanic* as the French, is hardly consistent with the complete absence of any similar use in the Latin. The general indication, however, in the French, Spanish, and the Latin itself, is that this use was more especially characteristic of the common terms, *Que*, *Qui* and *Quo*, and prevailed quite as much for the sake of euphony as of exact sound.

Taking now the whole argument in behalf of the Roman orthoepy, as tracing out a continuous line of evidence, from the rude inscription on the ancient monument, through the unformed orthography of the early ages, the obscurely indicated usage of the Romans themselves, the scholarly dicta of their grammarians, the phonetic adaptations of cotemporary languages, the rich remains of their august progenitor found in the Romanic tongues, down to the curious relics embalmed in even those of alien stock; and, in its acuteness, breadth and completeness, in its unexpected revelations and rich and delightsome results; in all which, nothing else that concerns the classic age or literature, can compare with it — and what can be needed, other than that it should be more widely known, to command for it, at least among a people like ours, so hostile to dead conservatism, and so alive to all earnest progress, the combined suffrages of all true Latinists.

If any at all informed are still hesitant, let them consider the manifold and striking advantages this system of Latin pronunciation substantially offers us. What a gain, to be able to disenthrall ourselves from the inglorious apathy of the English-Latinism of the age, and to place ourselves, not only alongside the earnest scholars of the early English times, whose better use of the Roman tongue has been so strangely ignored, but also where our riper advantages should have put us a quarter of a century ago — practically in their advance! What a gain, to approve ourselves superior to the objections, both staple and stale, so current among English-Latinists, of

* *Egz.* "Qui contra; Qui cum illi: A quo sibi quoque insidias; A quo hoc ipso; Qui de hujus atque adeo: Quo victo; Tu quoque fili mi; Neque si cum altero," etc. In all these, compare the *K* sound of *Qu* with the *Kw* sound, as to colloquial ease and smoothness. Does not the result suggest that here lies the secret of the whole matter, especially as regards *Que*, *Qui* and *Quo*?

† *Egz.* "Multa qvoqve et bello passus, dum conderet urbem." *Virgilius.*

"Ostia, dives opum studiisque asperrima belli." *Idem.*

"Sed qvamqvam in magnis opibus plumaqve paterna." *Juvenal.*

"Non eget Mauris jaculis neqve arcu." *Horatius.*

Compare in versification: *Qwoqwe et* with *Kok-et*; *Studiisqwe* with *Studiisk*; *Qwamqwam* with *Kamk*, and *Necqwe arcu* with *Nek-arcu*. *Richardson*, *pp.* 88, 89.

which scarcely one of note might not, with equal force, be urged against any attempt to establish a fixed, uniform and correct pronunciation of the English tongue itself! What a gain, to turn our backs once and forever upon that practical double-dealing with the Latin tongue, which accepts it as a language worthy, under Providence, to be preserved amidst all those fearful shocks which overthrew the Empire, and subverted its own national use, not only for the study and delight of after ages, but also to be forever a truth and power in the *thoughts* of men; and yet denies at once its living verity, and its ability to make good its claim upon such elements of its ancient vocal character as clothe it with its original truth and beauty on the *tongues* of men! What a gain, in short, to be able to pass from the confessedly blind and false, to that which, granting every possible doubt or defect, is in the great whole, so true, so self-consistent, so admirable!

Beyond this, how eminent the advantage, in using and teaching this noble language of a giant race, of being able, through the use of the Roman orthoepy, to draw the young Latinist into a closer contact with true scholarly research and discovery, and into a warmer sympathy with the original force and beauty of the language itself — the first upon the study of which he adventures — to inspire him with the delight of finding it no barbarous hybrid which is no speech either of gods or men, but an individual and genial tongue; and to afford him thus, at the very outset of his linguistic study, a new and admirable means of finer and broader vocal culture — a culture in no slight degree calculated to reflex favorably on even the pronunciation of his own English tongue. What a gain, also, to the postulant linguist, to secure at the outset a something in his Latin, germane to its cognate tongues, the French, the Spanish and the Italian — a something habituating both the ear and voice to an utterance, not only individually Roman, but generically Romanic, and hence greatly reducing the difficulty of learning their pronunciation. Certainly, in this age of foreign travel, it would be no undesirable advantage to obtain, without copying the imperfect and diverse methods of the continental scholars, a pronunciation so substantially accordant with their own as to be intelligible in all ordinary Latin speech. The occasional obscurity arising from the use of *K* instead of a *Ts* or *Tsch*, or a *Qw* instead of a *K*, or indeed a half-dozen other like divergencies, bears no comparison with the Egyptian darkness and Babel jargon of the English-Latin.

Or, touching the acquisition of the Latin itself, what an immense gain to have added to the literary delight attending the study of the

Latin, the exquisite satisfaction of finding it at the beck of the Roman orthoepy, emerging Lazarus-like from its repugnant entombment in the English-Latin, and appearing once more in the vocal freshness and beauty of a living and congenial speech! What a gain, through the simplifying of its sounds, to have reduced the contradiction and perplexity attending the early study of declension * and conjugation, and, through both their simplicity and their native accordance with the genius of the tongue and its laws of quantity, to have lifted the Latin rhythm out of the utter chaos of the English-Latin prosody—the very consummation of all things arbitrary and unmusical. Not to stop with the Latin — as indeed no scholar can — we must not forget that just back of, and beyond that, like her own Parthenon, peerless in the glowing Grecian sunlight, rises the splendid structure of the Hellenic tongue, from which Rome derived, if not the very elements of her written forms, the models of her literary masterpieces, nay, the very soul and body of her whole literature. More fortunate than the Latin, the Greek has been permitted to retain most of its ancient vocality, so that alike on classic and on Christian tongue the old accents may still linger, which in the musical monotone of Maeonides and the burning utterances of Chrysostom, entranced the listeners of the earlier ages. Will it be nothing, that by the use of the Roman orthoepy we bring the two languages, literary parent and child, into a closer vocal relation; nothing, that we make the transition from one to the other a simple ascent upon the same golden stair? Or, to go deeper into the delights of linguistic study, is it any other than an immeasurable benefit to have secured an orthoepy which both reveals and illuminates the numberless distinctions and analogies subjected to perpetual obscuration in the English-Latin pronunciation? † Is it scholarly, is it just, to compel these which so bind together and illustrate the brotherhood of cultivated

* *Egz.* Compare the declension of *Musicus*, as follows:
Roman — Moosekoos, Moosekee, Mooseko, Moosekoom, Moosekay, Mooseko.
English-Latin — Meusikus, Meusisi, Meusiko, Meisukum, Meusisee, Meusiko, etc., etc., ad infinitum.

† *Egz.* Different terms undistinguishable in the English-Latin pronunciation:
Amisi, Amice; Seu, Ceu; Sedo, Cedo; Sella, Cella; Situs, Citus; Scis, Sis; Siser, Cicer; Servus, Cervus; Sensus, Census; Surculus, Circulus, etc., etc.
Analogies obscured by the English-Latin pronunciation:
Latin — Acesis, Acoetis, Acies, Cello, Cedrus, Cera, Celaenae.
Greek — Ἄκεσις, Ἀκοίτις, Ἄκις, Κέλλω, Κέδρις, Κηρὸς, Κελαιναι.
Latin — Gemo, Genesis, Gerrae, Gyrus, Gypsum, Scilla, Sciurus.
Greek — Γεμω, Γένεσις, Γέρρα, Γυρος, Γυψος, Σκιλλα, Σκιουρος, etc., etc.
Latin — Alcis, Cinctum, Crocio.
English — Elk, Kink, Croak.
Latin — Cista, Cicer, Carcer, Caesar.
German — Kiste, Kicher, Kerker, Kaiser, etc., etc.

tongues to work themselves wearily into the understanding through the labyrinthine turns of an ever-variant and vexed orthography, when they stand so ready to flash themselves upon the apprehension, through the quick avenues of phonetic assimilation or identity?

With all these incomparable benefits, ready from the just recognition and use of the Roman orthoepy, to drop into our hands like golden fruits from the garden of the Hesperides, shall we still continue to hug to our hearts the false and benumbing pretense that the ancient pronunciation of the Latin has been substantially lost, and refuse the aid offered us by these ripe results of modern criticism for effecting its comparative restoration to its own native and commanding truth, beauty and power? Shall we, with all our New World life and independence, continue to strengthen ourselves in this most unscholarly apathy by a stereotyped acceptance of that altogether narrow and unjust conceit, that this august and potent language, professedly held by the scholarly throughout the world in profound esteem, and throughout the world, even now more widely used, and more influential upon all enlightened speech, religion and law, than any of its existing derivatives is, because not now the exclusive speech of any one nationality, no longer a living language in any such sense as makes it a matter of concern whether or not we possess ourselves of that vocal body which, in its elder glory and predominance, made it the tongue of the teeming millions of the Roman empire, and as such, both in the great peninsula and its world-wide provinces, wove it alike into the daily life of prince and peasant, orator and soldier, heathen voluptuary and Christian confessor? No! However it may be by others in this most vital part, slighted and abused; to us as American-Latinists its claims are sacred and imperative. To us it can be no dead, distorted, voiceless tongue. We behold in it the latest and ripest of the three great representative languages of antiquity, which alone had a literature that "the world would not willingly let die." We recognize it as the characteristic outcome of a national intellect which, in practical capability and administrative power, immeasurably out-distanced even the robust vigor of the Hebrew mind, and which proved itself as potential for the extension of organic law, as the latter had been for the preservation of revealed religion. We trace the splendid current of its linguistic fullness and force, despite the disturbing counter-drifts of the ages, throughout the still-continuous flow of all the great Romanic languages, each incomparable in its way, and chiefly because of its inherited Latin wealth. We find the overflow

of its strength and fullness, not only in a direct line penetrating the rugged recesses and enriching the arid soil of our native semi-barbaric Saxon, but also through the derivative channel of the Norman tongue, pouring into it the very substance and life of whatever in it is truly and distinguishably English. We behold it ever with living force asserting its right — a right first blazoned in the significant inscription fastened upon the cross of the Holy Jesu — to rank throughout all time as the latest and best of the three sacred languages, and as having gathered into its embrace and borne upon its bosom to these after ages the accumulated wealth of Christian lore in the Early Church, and in the Later Church, as well — until now, wherever throughout the round world that Cross flames in the sunlight over cloister or chancel, it looks down here upon the scholar's toil over the Latin page, and listens there to holy prayer or praise borne heavenward on the Latin tongue.

LABORATORY PRACTICE.

By Professor Albert H. Chester, A. M., E. M.,
of Hamilton College.

I hold it to have been demonstrated that what may truly receive the name of "liberal education" cannot be acquired by the exclusive study of either science or classics. The more of both we can obtain, the more nearly will our attainments merit the name. In the ordinary college course of four years we cannot study every thing, and so a choice must be made. What is the best proportion between scientific and classical studies is a problem which has not been fully settled.

The "new education" has not been in vogue long enough to settle its merits. But we have already seen enough to be able to form individual opinions, and I should much prefer the old classical course, as given in our best colleges, to an education wholly scientific. I should wish, however, to see introduced into it as much of scientific study as may be possible, as additional or optional, but not as elective, studies. Above all others, I consider the study of practical chemistry of most value to the college student, whatever may be the profession he chooses, and for the following reasons: Many possess by nature no mechanical skill; they can hardly drive a nail or turn a screw. Others are careless, and so apt to fail in performing any operation requiring delicate manipulation. Laboratory work requires constant care and patience, combined with perfect neatness. These qualities must be acquired before much progress can be made, so that the student will surely gain in those respects if he is diligent. Then this sort of study sharpens the wits by teaching the student to draw conclusions from what he observes. Instead of obtaining his facts from a book or a lecture, he himself deduces them from nature, and must learn to interpret them. And this is all in addition to the actual knowledge gained, and the insight into hidden mysteries. Unless you have witnessed it, you can hardly imagine the delight of a student who, for the first time, has, by analysis, found out for himself the composition of an unknown substance. It gives him a sense of power that is exhilarating;— he feels that he can unlock the secrets of the earth.

In the few weeks that can be given to this study during the college course, much may be acquired of future value, particularly if the profession has been chosen, and part of the study has direct reference to it.

A course in chemistry should begin with a careful study of the principles of the science, only using such facts and experiments as are necessary to an understanding of its philosophy. After this knowledge has been gained, the student should experiment for himself, going over the various elementary bodies, learning by this means the properties of substances and their relations to each other. He will also gain a knowledge of manipulation, and a dexterity with his finger tips of lasting benefit.

After this, chemical analysis may be studied, and then special branches, such as medical or agricultural chemistry. I would have every college graduate go over at least the first part of the course marked out, and I think the time for it could be taken without interfering with other branches of study. But this is often impossible for the want of laboratory room and conveniences to enable a whole class at a time to do such work. This is the difficulty with us at present, and I have to arrange my work accordingly. My plan of chemical instruction is as follows: In the first term of senior year the whole class takes general chemistry as a regular study. The course is necessarily rather theoretical than practical, and more attention is paid to the philosophy of the science than to facts and experiments.

During the second and third terms, the seniors are permitted to come into the laboratory and take a course in analysis. The regular recitations of the class being in the morning, the afternoon is free for such work. The book used is Eliot and Storer's Qualitative Analysis, with Fresenius' Analysis for reference. The first mentioned work gives a systematic course of analysis for the determination of the more commonly occurring elements. We begin with the first group, and after repeatedly testing a mixture known to contain them all, several solutions or powders containing one or more of them, it is not known to the student what or how many, are given. When he is able to detect with certainty every one of these, he is then allowed to take up the next group in the same way. Before he goes to the third, however, he must examine and separate mixtures of the first two. So he goes on until he is able to distinguish all the elements he has studied, in any mixture of them that can be made. It usually takes from six to eight weeks to go over such a course, though some are so apt as to finish it in less time. Those

who wish to do so and can spare the time from their other duties, are then allowed to go on to the study of special branches, such as medical chemistry or quantitative analysis, if they mean to make medicine or chemistry their profession. Those who intend to become teachers wish to learn to prepare gases, and to perform those experiments usually exhibited in the class-room.

Nearly one-half of the class just graduated took such a course, and are all able to distinguish the more commonly occurring substances, while some have tested for the poisons, and have done other work connected with medical chemistry, and one or two have made considerable progress in quantitative analysis. That this optional work in chemistry has not interfered with their other work, is proved by the fact that among this number are the men who have graduated with the highest honors of the college.

I have thus simply stated the methods of chemical instruction pursued at Hamilton College, giving at the same time my view of what the ideal course should be, and my reasons for considering such study very important.

MY OLD SCHOOL-MASTER.

By Professor Tayler Lewis, LL. D., L. H. D.,
of Union University.

A serious face it was, not stern to view;
I loved it well, for well the man I knew.

Goldsmith's picture was little applicable to him. His own idea of his office is best set forth in the language of the Bible, 2 Sam. xxiii. 3: "He that ruleth (be it over men or boys), must be just, ruling in the fear of God." Reverence was the origin of love; "the fear of the Lord was the beginning of wisdom." To his conception, God was a great and tremendous being — a sovereign supremely good, severely just, yet most loving, most merciful, ever maintaining the awful equilibrium of these sublime attributes, by making the one the measure of the other—the "Lord and governor of the universe" — "glorious in holiness, fearful in praises, doing wonders" — the only source of all true law, of all true authority as exercised in Heaven and earth, in the church, in the state, in the family, in the school, in *foro conscientiae*, in the individual soul. In like manner, all truth was God's truth. Physical truth was His, because He made it; nature was simply what He had created to be and kept in being. Necessary truth, eternal truth — that, too, was His as essentially belonging to the divine mind, and as shining upon man, however faintly and finitely, from that divine mirror or image He had placed in the human soul. So, all *right* was his, not by arbitrary enactment, but as a like reflection of the eternal justice. He held to these, not as mystic transcendentalisms, for he was very far from that turn of mind, but as everlasting verities, never to be called in question, or regarded with the least misgiving. All truth was God's truth; in other words, all *truth* was *trust* — personal trust in an eternal personal being. All *right* was God's *righteousness*; any other *right*, any other morality with its "enlightened self-interest" was falsehood, and darkness, and rebellion. His definition of deity was drawn from the Westminster catechism: "God is a spirit, infinite, eternal, unchangeable, in His being, in His wisdom, power, holiness, justice, goodness, and truth."

This might seem a description of a preacher rather than of a school-master, but no preaching that I have since heard ever produced such an impression as the maxims and doings of that revered teacher, although he was, in the main, a man of much reticence, and very unlike the studied moral haranguer. I will endeavor to sketch him under three aspects — as a teacher, as a moralist, as governor of a school. A brief outline under each is all that time will allow. In the first place, he made great use of that memoriter method, now so often caricatured as "words without ideas," or "learning by rote." This subject was fully discussed in a paper, read before this convocation eight years ago. I will, therefore, only touch upon it here, avoiding repetition as much as possible. "Good forms of sound words," right thinking as of more importance than thinking for oneself, authority first as the surest ground of mental independence afterward; these were ideas that entered into all his teaching. He was as far as any modern instructor from permitting the child to rest in mere sounds. The right language, however, the right rules, the perfect expression — these came first, as the foundation of all the right thinking and right doing that were to follow. These were the surest means of leading the child to think for himself in the most wholesome way, and with the most perfect material for thought, instead of the sham processes, and the delusive leading questions of what some would style the method of development. There was with him no parade of philosophizing, leaving the mind undeveloped, unformed, really barren of *ideas*, unless as this name is given to mere sense images. This he regarded as the true order of education — the older mind, whether of the individual or of the race, must furnish the vehicles of thought for the younger. When it has used these with docility, then may it add to the store, then may it think for itself. Without some such initial process as this, there is no true thinking at all. Even if the child "catches something," as the stupid pupil says in the Clouds of Aristophanes, he has no place to put the embryo thought — he has nothing wherewith to hold it. Or, to use another metaphor from a similar source, even though some sort of dim ideas may seem to be born in such a false method, they are but "wind eggs" after all, misshapen weaklings, that perish in their birth, or turn into monstrosities, because there is no clothing ready for the untimely things, no well-prepared swathing bands to give them shape, as well as strength and symmetry. Hence it is that with all our talk about "the philosophy of teaching," there should be so much of intellectual abortion.

My old teacher had nothing of this. The chief merit I would claim for him was that of laborious, conscientious fidelity. He taught us the rules of arithmetic; he made us commit them to memory; he was very precise about every word as it was expressed in the book, never weakening the child's confidence in it by assuming to be wiser than the standard he had carefully selected. He would not listen to the plea that it made no difference about the words, and that it would even be better for a pupil to use his own language, provided he understood the *thing*. According to his view, the child did not understand the *thing* until he had the right *word*, and thus the *words* became very important *things*. On the same principle, he required the exact doing of every *sum*, as it was called, then that we should carefully prove them by the prescribed methods, and afterward write them fairly out in a copy-book provided for that purpose. And so in grammar. All Murray's rules and definitions had to be committed *verbatim et literatim;* then they were to be applied in parsing, the teacher correcting when we missed; and so the rationale in time entered the mind unsevered from the rules, or in that legitimate way which secured their correct practical application. In this way we did learn clearly and thoroughly. It is a gross libel on such old schools as I am describing, that they had mere parrot-like recitations.

The power of good words — the spirit that is in them — their self-revealing light when placed in their proper relations — the mystery of language which our keenest philologists fail to explain —the inseparable connection between it and the rational soul; there is something here, I am satisfied, that demands from educators more attention than has been given to it. The subject has a practical as well as a seemingly mystical side. Of how few words, comparatively, have we derived the meaning from the consultation of a dictionary! They have revealed themselves to us in their logical relations, and this not merely as the names of outward visible things defining each other, but as indicative of the most inward and abstract ideas, waiting for their true representatives. In other words, we have learned them from the light that is in them, from the spirit they have themselves derived from the formative intelligence of the human spirit, whether individual or generic.

The power of "good forms of sound words," for the child beginning to read, for the adult, for all minds however mature, this was my old school-master's *aurea regula*, not formally enunciated in its philosophy, as I have imperfectly attempted to do, but constituting the very soul of his method, if method it could be called.

Not to beat the air here, I would present illustrations of this derived from the first reading lessons of Webster's spelling book. They were alluded to in the paper mentioned, but I hope my audience will excuse a little seeming repetition, as I now mention some of them again for a different purpose. Let it be pardoned, then, as an old man's prejudice, when I say that I know of nothing in early education to be compared to this old book *of* Noah Webster, and especially in the first reading lessons, so perfectly meeting the child's mind, without any loss of their innate sublimity — so *childlike*, I may say, yet never, *childish* — drawing up the young soul to their own height, without any lowering to a puerile standard, or to that flat nonsense presented in some modern specimens that might be cited as having the aim to lead a child to think for himself. Those first reading lessons of Webster's spelling book! — they are never to be forgotten. It is sixty-six years ago, but the scene comes up in all its freshness — the young class just standing upon the threshold of that mysterious art, that first introduction to words seen as well as heard — to words as objective things, bringing with them something of a higher spirit, or as representative of the universal intelligence. I see them again, those slender forms — their voices are in mine ears — the child's slow monotone, as he points his finger along the line, pronouncing each monosyllable with equal emphasis, and now and then looking up to the grave face bending over him, and so solemnly intent upon the momentous work in which he is engaged.

No-man-may-put-off-the-law-of-God.

That was the first line I ever read, and the second was like unto it:

My-joy-is-in-His-law-all-the-day.
O,-may-I-not-go-in-the-way-of-ill-men.
He-who-came-to-save-us-will-wash-us-from-all-sin.
I-will-be-glad-in-His-name.

It was the dawning of immortal truth. How much of precious meaning in these few words! How sublime they are! — how self-revealing! We *did* understand it. Men who caricature and talk about parrot-lessons, and words without ideas, may declaim as they will. We *did* understand it. The terms revealed themselves to us without the sham of object lessons, or any puerile illustrations. That word *law;* it is probable that it had never before fallen upon my ears. I may, perhaps, have heard men talk of "going to law," but it carried no intelligence. Surely, I had never before read it in a book or looked it up in a dictionary. But as then used in that

living connection, I did understand it. It fell upon the mind with light and power. No clearer idea of it have I since received. God I had heard of; the great name was uttered in the recital of the oral infant catechism; it was connected with that mysterious question: Who made you? But this was a new revelation of Him. In the accompanying monosyllables, clearer than in many a sermon, revealed themselves the ideas of power, omnipotence, obligation, necessity: "No man may put it off." So the words that followed: "My joy is in His law all the day." There was a light, a light rational in them, as well as a joy. We truly yielded the approbation indicated. We "rejoiced in the law after the inward man." We "consented to the law that it was good," as human nature is compelled to do even after it feels the awakened "law of sin and death warring and ruling in its members." "O, let me not go in the way of ill men." This third line brought up the idea — the embryo idea it may be — of the great divergency — the two roads then beginning to part, but with their ends so immeasurably distant; the "way of virtue," and the "way of vice," the "upward toiling and the smooth downward path," to use the language of Hesiod's old picture, made so many centuries ago, or Solomon's way of life and way of death, or the still more vivid representation of our Saviour — the broad and narrow way — the way of righteousness and "the way of ill men," from which we were thus early taught to pray for deliverance, as the way of danger, or the one in which our feet might so easily incline to run. "He who came to save us." It was not a mere sound. We did attach a precious meaning to that name, and along with it came the closely suggested ideas of salvation, of cleansing, purity, deliverance from sin. As I have said, it may have been in their embryo state, but they were all there present to the soul in some spiritual form, and with some degree of spiritual power, when we said: "I will be glad in His name;" feeble and faint, indeed, but more precious, even in their dawning, than all the *practical* instruction of our later utilitarian school-books, with all their boasted freedom from dogma, and all their contempt for mere rote instruction.

Some teachers would have attempted illustrative comparisons, in order to make more clear these ideas of law and salvation. They would have done this in order to make it *understood*, as they say. They would have explained it, perhaps, from the physical world, by some talk of the animal, mineral or vegetable kingdoms. Or, to be very familiar, they might have taken examples from the rules of the

play-ground; or, more ambitious still, have discoursed eloquently to these young immortals on the law of the land, the constitution of the state or the nation. My old school-master did nothing of the kind. He let the light shine — that light by which we see light. "The entrance of thy word giveth light"— the light that gives its significance to the lower things, instead of receiving light from them. The holy name of God was connected with the idea of law — *His* law as something which "cannot be put off." Our old teacher left it there. Not only confusion, but enduring falsehood might have entered had he attempted more. And so with that name, Saviour. It needed no illustration drawn from any common earthly peril. That would only have marred by limiting and belittling the idea. Better to be left in all its simple power and purity, as connected with that other precious thought of cleansing, washing, salvation from the most fearful outward doom accomplished alone through salvation from sin. That it is which brings the thought so near, which makes it so intelligible, and for which we should be "glad in His name." There is no time too young for the introduction of such ideas in their simple grandeur, unweakened by any foreign or lower association. They are now forbidden to be taught in the schools of Cincinnati, and in some other cities of our land. Such is our progress. Alas! alas! that so it should be.

I am mingling my two divisions together. Something must be briefly said of what may be called his more formal moral instruction. In its outward aspect, this consisted chiefly in the memoriter recitation of the Westminster catechism, to which there was devoted a portion of every Friday afternoon. That absurd, unmeaning, and utterly indefinable cry of sectarianism has long since banished this. It is now obsolete; but surely I may be pardoned for calling it up as an interesting relic of the past, and as having some bearing upon the general ideas of education. I do not believe that any child was ever morally or intellectually injured — that he has ever known less or thought less in consequence of learning that catechism. Its choice English, its most logical diction, if nothing else, would make it worthy of study. It is quite commonly said that it is not adapted to children. A distinguished preacher, who has also written a novel, endeavors to convey that impression. In this latter production, there is a burlesque representation of an attempt to get from a boy the answer to the question: "What is God?" His blunders are set forth in a very ludicrous manner. Still more of the same character is given to the efforts of the good aunt to counteract the perversity. The boy cannot understand it, and the impression evidently

designed to be left on the reader's mind is hostile to any such method of religious instruction. But here is the spiritual or psychological wonder. This perverse youth, to whom his catechism is but an unintelligible mass of words, has no difficulty with the religion of nature. There is nothing hazy to him in the theology taught by the clouds or the sun-settings. He is represented as clearly understanding the revelations made by the flowers, the religious ideas that come from the evening cry of the whippoorwill; but the well-chosen words of the Westminster divines, poor boy, he cannot comprehend at all. It is simply *dogma, dogma*, unintelligible dogma, and nothing else. That sublime formula, "the chief end of man as living for the glory of God that he may enjoy him forever"— God as a spirit — the words, *eternal, unchangeable, wisdom, power, holiness, justice, truth;* these have to his mind no corresponding thought, no moral emotion; they fill him with no awe; they have no tendency even to draw him up to any higher sphere of contemplation; but the trees, the winds, the whippoorwill — they talk to him in an intelligible dialect. In our school, we might have been too obtuse for that — too plodding, perhaps, or having too little poetry to make much out of the clouds or the whippoorwill, but the Westminster catechism we *did* understand, in some way, and to some degree, for it made us tremble. We perceived *this*, at least, that, in the truths presented, we had a momentous, an eternal, and, young as we were, a deeply personal interest. We did have some understanding, some spiritual insight, of what was meant by the "chief end of man," and of "living for God's glory," in distinction from selfishness, pleasure, and the world. We understood the assertion that God was infinite power, in other words, that "He could do all things," as Job was brought at last to confess; that He was eternal, and would never die; that He was omniscient, that is, knowing all things, numbering the very hairs of our heads, omnipresent, every moment nearer to us than we were to ourselves. We had these ideas which Sir William Hamilton disclaims as belonging to the human mind. We failed, indeed, as that great philosopher failed, in bringing this awful thought eternity within the bounds of a sense conception, but the *idea* as distinguished from the baffling *conceptual* effort, we had as certain then as now, as awful then as now. Years, books, study, have added nothing to it. The young soul thinks more than is commonly supposed, especially when in close communion with the suggestive power of a deeply spiritual mind. It meditates more than it afterward remembers of itself when the world with its darkening ways and darkening cares has drawn a curtain before the

exercises of that thoughtful, questioning, musing spirit which often characterizes even very early life. It is wonderful how readily the child receives the idea of *soul* as something distinct from the body, and of God as the author of its being; how it grasps them, as it were, as the infant stretches out its hand for the light. The question about their being innate, or *a priori* ideas, is very much of a logomachy; the facility with which it receives them shows that in some way the young mind claims them *as its own*. In after life, as has been already said, they become obscured. A wordly scepticism dims the mirror; a pretentious sense-philosophy bewilders us with the sheer impudence of its positiveness; science disturbs us with its peering microscope; we argue with it; we contend with it, until we receive spiritual hurt in the conflict. But there are times when the child's clearer vision comes back to us; soul is seen to be an easier idea than matter; God is more intelligible than nature; we wonder at our difficulties; we go to school again, and hear the humbling, yet strengthening, voice of the Great Teacher, the gently chiding Saviour, saying unto us: "O, ye of little faith, wherefore *did* ye doubt?"

It was to all of us an awfully solemn book, that shorter Westminster catechism, as taught by that grave and deeply religious man. Nothing else has ever produced so distinct and solemn an impression. No religious books for children, such as we now have in our Sunday-schools, no goody tales of good little boys and girls, ever so reached the moral consciousness. It might not have been so had we learned it under some other teacher, but in the hands of this old school-master it was indeed awful, not from any preaching accompaniment — for he was not a man given to commentary or alarming exhortation — but from the grave earnestness which showed that *he* thought, and which made *us* think, that this compendium was not a mere verbal exercise, but a body of truth connected with our highest destiny as accountable and immortal beings.

It is a libel on children, as well as on the catechism, to say that they cannot understand it. "Justification, adoption, sanctification," they have become by-words of caricature, they have been represented as mere parrot-sounds without ideas; but it was not so to us, because we were made to feel that we had a deep interest in the truths represented by them. As intelligible, says a ribald newspaper, as the old question and answer on "effectual calling." Of this, and things like it, the clerical novelist referred to attempts to make rare sport. But to us "effectual calling" was a very solemn thing. God called us; the Saviour called us; so we were told and believed, and

sometimes felt; the world called us; pleasure called us; appetite called us — not only "the lusts of the flesh," but even then what Paul calls "the lusts of the mind," soul, sins, spiritual passion, pride, envy, hatred, anger, revenge; all these were calling us. Falsehood was early calling us with her syren voice; this we began to feel and know. Which calling should be "effectual?" The answer in the catechism brought us face to face with that great mystery we cannot begin to contemplate too early, though it may take an eternity for its perfect comprehension — that doctrine seemingly so harsh and humbling, that "dour Calvinism," as some ignorantly style it, though the serious Wesleyan holds it as truly as my old school-master, that doctrine of *grace*, of God's unmerited grace, not as a source of repulsive fear, but as the only hope of every one who truly says: Be merciful to me a sinner. Yes, we understood the question well; we were deeply moved when the old teacher prayed for us that the better calling, through God's powerful grace, might be indeed "effectual" in our souls.

I could say much on this old catechism and my old school-master's mode of teaching it, and of the effect produced by it on the minds of the serious men and women that school afterward sent forth to play their humble parts in the world; but the time of this University Convocation will not permit. Let us hasten, then, to my third division: His ideas of school government, and the practice to which they led.

"Respect thyself," is the motto of some educational reformers. They would have the child cultivate his self-esteem; they would appeal to "his higher nature," as something accidentally overlaid by a foreign evil. "Fear God," was the injunction of my old school-master. He had nothing to say of "manhood," and "self-respect." It would not have seemed to him to sound in harmony with the doctrines of the fall, the universal sinfulness, and of repentance as the first duty of all, whether young or old, who had in them the original taint, or who had gone in the way of actual transgression. The evil doer, the evil thinker, had no right to respect himself. It was wrong to tell him so. Perhaps this doctrine of self-respect might have been so presented as to have obtained from him some sort of acquiescence. Regarded as a true sense of one's dignity and responsibility as an immortal being, he might have seen in it some points of connection with the other and sterner view. Man's relation to the divine, his grand yet perilous rank above the mere sensual being, the awful risk, the danger of a world-surpassing *loss* as compared with the height of glory that may be *gained* —

all this might have come in as an enforcement of the precept: "Fear God, for thou art fearfully and wonderfully constituted," in thy moral and spiritual as well as in thy physical relations. Even in the ruins of the fall, man has a true spirit-worthiness; even his sins shall give him consequence. But this is not the meaning of the maxim as now commonly used, and my old school-master was not much of an ethical or theological casuist. He was a plain man to whom scripture was all in all. The second answer in the catechism taught him, as he taught us, that this "was the only safe rule given to direct us how we might glorify God and enjoy him forever." "To fear God," it was therein plainly taught, was "the beginning of wisdom." To begin, therefore, with any thing else, was darkness, and folly, and sin.

In regard to his school discipline, he may be described as a man who never practiced *finesse*. There was with him no *acting* for present effect. He never flattered children. He rarely praised, or only when it was an impulsive expression called out by unmistakable well doing, and, therefore, all the more precious on that account. He never appealed to honor, or to any thing else that might become false by being put in the place of the prime idea of right — that is, the "law of God which no man may put off" for any other rule. The spirit of his judicial administration might ever be translated into the language of the Psalmist: "I will make mention of THY righteousness — THINE only." He never talked "goody" to children, or attempted to call out an artificial state of mind, or one in which the momentary desire to have the feeling that was commended, and because it was commended, may be so easily mistaken for the actual spiritual possession. Better the hardness and sterility of the desert, than any delusive mirage of unreal sentiment. Nothing is more injurious to a child than a forced and artificial goodness that may make him a false character all his life.

There are teachers who pride themselves in flattering arts of this kind. They are generally such as are opposed to all corporal punishment. They can get along without it, they say; and they do so get along, but at a great moral risk, and with the expense of much *immoral* "persuasion." It is a fact undoubtedly; a school can be governed, or rather *managed*, in that way. Order may be obtained, the teacher's ease may be secured, but at the sacrifice of something far more precious. Disciplinarians of this kind sometimes point with triumph to their apparent success. Look at us, they say; see how we get along without that relic of barbarism; we appeal to a boy's self-respect; to his manliness; we tell him what a fine fellow

he is, and what a pity it is he did not better know and appreciate what is in him. Yes; see how they appeal to "his higher nature!" — they tell him he may become a millionaire, a railroad king, a member of congress; with such magnificent capacities, he should be above playing tricks and making uncouth noises in the school-room. It is wonderful, they say, how such a method operates, how much more pleasant, too, it is than your old system of harsh censure, or of brute force. Could my old teacher have comprehended this, he would have characterized it, not coarsely, but with righteous indignation for its practicers, and tender pity for its victims, as all from the devil — all lies and coming from the father of lies. And that is the true name for it. It is simply a lie — a process hollow and insincere on the part both of the teacher and the pupil. No good can come from it. The boy sees through it; he cannot help feeling it, at least, as an atmosphere of deceit, though pleased with it for the moment. Some grains of truth there may be in the mixture, but what an alloy of falsehood and false motive runs through it all, converting it into a deadly moral poison. The contagion of the finessing spirit is easily caught. It passes from the teacher to the pupil, and becomes, perhaps, predominant in all his after life. Such crops of tares are being rapidly sown; they are indeed successful; they are growing with a rank plentifulness; but O, the harvest they promise for generations to come. These managing teachers may boast of their management; but there are other indicia more unmistakable than what they call success. The seeds they have sown may be traced in the *managing* politician, the managing editor, the managing merchant, sometimes in the managing clergyman, or generally in the managing men of every kind who are giving such a taint of falseness to prominent financial and political transactions throughout our land. There is far more danger from this kind of progress than was ever to be feared from sectarianism and the Westminster catechism.

What we most need in early life is to live in the pervading presence of spiritual honesty. The human mind is early prone to deceit. From the birth, the Psalmist says, in language that we may deem hyperbolical. However much we may lament it, or characterize it as a dour assertion, children do easily and early learn falsehood. How important, then, that the first moral atmosphere which the youthful lungs inhale, should be of the purest kind,— the wholesome, bracing air of earnest, solemn truthfulness! How carefully should the dawning intellect be kept from all early contact with

the finessing or the managing spirit. No knowledge can be a compensation for a deadly moral contagion so easily caught, and so fatally retained in after life. The rod is mercy compared with it.

I have remarked that, with my old teacher, all law, whether of the state, the family, or the school-room, was from one source — all divine in its sanctions, even with the admission of great imperfection in its human administrations. He himself, humble man that he was, and in his humble station, did not shrink from applying it to the school authority. He himself was the delegate of God, "the minister of God, to execute righteousness" within his own narrow dominions, and that in respect to all moral offences that became visible. School order was strictly maintained, although it might be said that in his regimen it held a subordinate place. In such a presence it almost maintained itself. The very saintliness of his character seemed to secure it. It could not be said of him as in Goldsmith's picture:

> **Full well they laughed with counterfeited glee,**
> **At all his jokes, for many a joke had he.**

The charge committed to him was too serious for any such relaxation. Neither did he seek to repress by any affected sternness. There could not be noise and frivolity in the presence of such a reverence-inspiring, and, at the same time, love-inspiring truthfulness. It was a different class of offences that most commonly invoked his penal discipline, or such as have been lately denied to be subjects of school punishment at all. I mean offences against the moral law which he regarded as falling within his jurisdiction, whether they did or did not involve any breach of the school peace. Within his small domain he had the power of the parent and the judge. The ten commandments, according to the exposition of the catechism, formed his code. He punished boys for profanity, whether in school or out of school, for unchaste and obscene language, for taking what was not their own, for telling lies, for covetous acts, for violent anger, for fighting. He would point out the commandments by whose letter or spirit they were severally forbidden. "He that hateth his brother is a murderer," was ever his scriptural exposition of the old Mosaic law. However stern it may seem, it was derived from the apostle of love.

Of course, my old school-master believed in corporal punishment; "he that spareth the rod loveth not the child." The very solemnity of its infliction, however, made it comparatively rare. When it did come, it was a time long to be remembered. It was no personal strife, no "scuffle of opposing wills," as has been lately said,

no mere "revenge." The feeling of the culprit was like that of the man who hears sentence pronounced upon him in those higher human courts which carry most semblance of the divine — such as are presided over by a Hale, a Mansfield, or a Kent. The opposing personality of the judge disappears in the criminal's consciousness that he is surrounded by the invisible and irresistible power of law — that he is in the presence of something that represents the eternal justice in the heavens; and with this he cannot contend — cannot think of contending. But if there must be punishment, some would say, let it be in private, or after school. Not so my old teacher. Justice, he held, should be in *the presence of the sun.* These are the very words which Chancellor Kent once used to me in expressing his condemnation of private executions, with the morbid sensational evils of the *reported* scene appealing to the morbid imagination — evils greater than any that have been charged upon the public exhibition, whilst altogether destitute of its judicial dignity and moral power. So in the smaller sphere we are considering. Justice must not hide itself, nor treat sin as a nuisance to be covered in darkness.

The method of proceeding, and the scene as witnessed in the school-room, have left an indelible impression on the memory. The coming event showed itself in the premonitory signs of a hushed anxiety. It prepared us for the announcement that was to follow: "*The books will all be closed; a boy is to be punished; it is for the sin of lying.*" This was the offence he most severely condemned, as being most directly opposed to the truthfulness of the divine character. A name is called. The trembling culprit comes forth and takes the place assigned to him. "Let us pray;" this was the next thing heard, if it was a case of peculiar aggravation. And he *did* pray; it was no disguised preaching *in terrorem;* there was no *finessing* in this solemn business. One feeling pervaded his short and fervent supplication. It was the peril of an immortal soul going on its earthly way with sin unpunished — the present peril demanding the temporary pain, as, perhaps, a means of averting the eternal, or as a remembrance that might lead to a better life through a penitent faith in Him on whom "was laid the chastisement of our peace, and by whose stripes we are healed." And then the few words to the sobbing offender: "The evil doer must suffer; sin and pain inseparable; every sin a sin against God, and, therefore, however small in appearance, containing the seed of an infinite malignity." One thought was seldom omitted, with its peculiar expres-

sion, of which the very words are well remembered: "If you tremble thus at the sight of this rod which I now hold in my hand, how will you bear it, my child, how *will* you bear it, when God shall lay his iron rod upon you at the last great day?"

There was no affectation of sentimental regret to mar the truthfulness of the moral effect, and yet there was no resisting the feeling that, at the bottom of all this severity, there lay the tenderest anxiety, the deepest love. The admonition, however, was more full of awe than the chastisement that was *sure* to follow. Sure I say, for it was no got up scene, no *in terrorem* prelude to be followed by an affected condoning, with a hollow promise of doing better in the future. The mode of punishment was by taking off the coat, and the application of a flexible rod, slender yet firm, producing a short, sharp, and stinging pain in the flesh, as an effectual remembrance that might sink, clearly and permanently, into the spirit. Care was taken that there should be no physical injury, though the marks of the stripes were left. In this proceeding, so removed from all angry passion, there was no smiting with heavy rulers, no beating or cuffing with fists, no unseemly altercation, nothing, in short, to detract from that spiritual lesson this necessary infliction of pain was designed to imprint.

A revolting picture, some will say. I am not concerned to defend my old school-master. The sketch is offered not as a model, but as a subject of thought for thoughtful men. He himself would have disclaimed, perhaps, the portraiture I have given of his saintly life; for he was the humblest of men. Perhaps, too, the picture has derived coloring or enlargement beyond the reality, from my own mind, or the vivid interest of an imagination that has often dwelt upon it. But I have endeavored to be honest, and think that the account given is truthful and sincere. He was an elderly man when he taught me to read. About twenty-five years ago, at a very advanced age, he departed to the land of reality, where "the shadows are gone and truth has come" — where "they who have turned men to righteousness shall shine as the brightness of the firmament, and as the stars, forever and forever." It is easy to believe of him that he has heard that blessed salutation for which it is worth all of life to live: *Εὖ, δοῦλε, ἀγαθὲ καὶ πιστέ* — "Well done, servant good and faithful; thou hast been faithful over a few things — over little things — I will make thee ruler over many things; enter thou into the joy of thy Lord." His earthly remains have been sleeping these many years in the mountains of northern New York, where

he long toiled as a laborious Presbyterian missionary. Whether any grave-stone marks their resting place I know not; but it has been to me a labor of love to give this imperfect monumental tribute to the MEMORY OF CYRUS COMSTOCK, humble name, unknown to earthly fame, but written, high up, it may be, in the Lamb's Book of Life. Let those who think so, regard him as having gone to the one extreme in his ideas of education and school government, there can be but little doubt that some views, now widely prevalent, are tending much too far in the other.

MEMOIR OF THE REV. CYRUS COMSTOCK.

The paper to which this is annexed was designed to sketch some features in our earliest common school instruction that have now become, in great measure, obsolete. Some of the Regents and other members of the Convocation having expressed an interest in its principal subject, the following brief memoir may not be deemed out of place.

Cyrus Comstock was born in New Milford, Litchfield county, Connecticut, December 3, 1765. His parents were direct descendants of the Puritans, inheriting their deep and intelligent piety, their stern devotion to truth, doctrinal and practical, their love of that true social order which has its only secure foundation in the acknowledgment of God and religion. A Puritan parent, whether his wealth be great or small, must leave to his children the means of a livelihood. Early in life, therefore, Cyrus was taught the trade of a shoemaker, and this he would doubtless have followed, as the will of God respecting him, had not failing health turned his mind to another and higher field of usefulness. He became a student in the Academy of North Salem, Westchester county, New York. Here he was a classmate of Daniel D. Tompkins, and associated with him in an academical literary society. The fact was unknown, and would not have been noticed, had it not been for a slight memorial of it found among a few papers Mr. Comstock left behind him. Daniel D. Tompkins became afterward a judge of the Supreme Court, was nine years governor of the State of New York, and was then elected to the vice-presidency of the United States. Which was truly the higher man in the sight of God, the aspiring and successful politician, or the humble teacher and missionary, the great day of light can alone determine.

The parents of Mr. C. removed afterward to Hoosick, Rensselaer county, New York, where they died at an advanced age. At this period he became a school-master, and continued such for a number of years. Moreau and Northumberland, Saratoga county, New York, Kingsbury (or Sandy Hill), Washington county, and some other towns, were the principal scenes of his labors. In Northumberland he taught from 1807 to 1811. It was there I learned of him my first lessons in spelling and reading—receiving at that early

day an impression of truth and goodness that has ever kept its unfading aspect in my memory. It was a neighborhood of plain people, far from wealthy, but of unusual intelligence. Their mental and moral worth is shown by their appreciation of Mr. Comstock, whom they kept as their teacher for nearly four years, continuing his services during the summer as well as the winter. This was quite unusual in those times, and rendered more striking by the fact that it was before any aid was received from the State. Of Mr. Comstock's strict religious instruction, nothing more need be said than is already expressed in the paper dedicated to his memory. One fact, however, deserves mention in connection with it. Although the neighborhood was mainly religious, there were a few who rather prided themselves on their free-thinking. But these men, at that time, never showed the least hostility to such a course. They would have been hurt had their own children been made exceptions — had they been left out at the opening prayer, or during the reading of the scriptures. "That catechism will never harm my child," said one of them, "and if Mr. Comstock can only make him as good a man as himself, I am willing that he should teach him any creed that may produce such a result." It was the homage rendered by unbelief to a deep religious life. This is mentioned as showing the change that has since taken place. An alarm would now be everywhere raised at such a proceeding. A fearful danger to our liberties would be detected in the mere idea of teaching a child that the sublime "end of his existence was to glorify God that he might enjoy him forever." The mischief has been done by the politician. Sensible sceptics would probably have made no opposition; they might even have preferred that their children should share in the religious instruction imparted to others, had not the demagogue, to gain their political favor, told them of the monstrous wrong thereby done to their consciences, and of their "inalienable" right to a veto upon any educational ideas predominant in a community, or however precious they might be to the consciences of other men. In an evil hour some one brought into our school laws that word "sectarian." It may have been meant for peace, but nothing has ever been more fruitful of strife, more fraught with that very evil which is indicated by this odious and almost unmeaning name.

At the close of his school-keeping life, Mr. Comstock was licensed to preach. His divinity studies were pursued with the Rev. Elisha Yale, of Kingsborough, Montgomery county (now Fulton). He was soon after ordained as an evangelist, thus adopting a line of ministerial duty that he ever persevered in from deliberate choice

He preferred it to the charge of a congregation. To preach in school-houses, in remote settlements, to build up feeble churches, to seek the neglected sheep in the wilderness — it was in work like this that for many years he followed Christ, often, like his Master of old, "having no place where he might lay his head." I have heard reports of his sleeping in the rude log cabins of the mountain region where it was his delight to labor, and finding in the morning his bed whitened by the snow which the wintry wind had driven through the crevices. The thought has sometimes occurred what a pure abstract equity it would have been could some ecclesiastical power have transferred this rheumatic old man to the comfortable houses of our city clergy, and given them for a season his place in the wilderness. But God knows what is best for his servants, and both parties might, perhaps, have received moral detriment from the change. Mr. C. was just the man for the course of life to which he deemed himself called. In his preaching, as in his teaching, he had but one simple rule of conduct. It was to follow the will of God as revealed to him in the study of the scriptures and the leadings of the divine providence. Any other ambition was unknown to him, as it was unknown to Him whom he ever took for his model and guide.

During this evangelical period of his life, Mr. C. was under the care, first of the Berkshire and Columbia, and afterward of the American Home Missionary Society. As thus employed, he remained, laboring and preaching until he was past the age of eighty years.

In 1819, Mr. Comstock married the widow of Prentice Barrows, of Bridport, Vermont. A step-son, Franklin Barrows, Esq., of Springfield, Illinois, is the gentleman by whom these particulars of his earlier life are mainly furnished. It need only be added that, during his last years, Mr. C. resided on a farm he had been aided to purchase in the town of Lewis, Essex county, New York, where he died at the very advanced age of eighty-seven.

In the midst of his labors as teacher and preacher, he found some time for authorship. In 1810, he published a book on "The Education and Training of Children," and in 1827, a treatise on "The Abrahamic Covenant." The first I read many years ago, though it has now been long out of print. Its chief merit is the warm love it shows to the subject of which it treats. "Feed my lambs," is the motto it carries on every page. A reader of the present day might have seen in it little that could be called philosophical or pro-

found, but it had something far better, the pure intelligence, the penetrating, practical wisdom of a loving heart. The other book I have never seen, though I should greatly delight to obtain it. It is, very likely, a specimen of quite old-fashioned theology, but its very title shows the man, and suggests immediately one of his most cherished views. "The Abrahamic Covenant;" it is the sacred ideal of "The Family"—of "the mercy of the Lord which is from everlasting to everlasting upon such as *keep his covenant*, and his righteousness unto children's children."

An uneventful life, it may be said, hardly deserving a memoir however brief. But of that there may be different estimates. There was one idea alone for which Cyrus Comstock might have had claimed for him a place among our wisest men; if not on the ground of originality, at least for the pertinacity and pure truthfulness with which he held it. It is an idea which has a double aspect; "All truth God's truth; all true authority God's authority," whether in the family, the school, the church, or the state. It was a doctrine he *lived*, instead of holding or expounding it as a bare philosophical speculation. Long before the writer could clearly understand, or be interested in, a logical definition, this idea, thus imbibed from revered lips, this feeling rather, grew up in his mind as an ἔμφυτος λόγος, an "*implanted word*," an "ingrowing" thought, striking deep its roots in all subsequent mental development, and centrally modifying any view he might afterward be led to entertain in the fields of morals, politics and education. It has already been adverted to in the paper that precedes. This alone, if there were nothing else, made the name of Cyrus Comstock a fit subject to bring before the honorable Board of Regents, and an assembly of men devoted to theoretical and practical education. With such a thought pervading it, the plainest school, with the plainest instruction, has a value surpassing that of educational systems the most pretentious, and having the most imposing outward advantages, yet lacking this one glorious and most conservative element of all true spiritual culture.

One of the Board of Regents, the Hon. Robert S. Hale, has been mainly instrumental in bringing out this brief memoir. His effort was inspired by an ardent admiration of Mr. Comstock, whose acquaintance he had made only a short time after coming to reside in Essex county. His testimony, therefore, forms a fitting close to this short and unpretending narrative of a most useful life. I give it in his own words, as honorable to himself as they are to the one

whose memory forms the subject of their glowing tribute: "I came into this county a young man to commence my law studies, when Mr. Comstock was about eighty years old. He lived about six miles from me. I saw him only occasionally during the later years of his life. But I could not fail to be impressed with the simplicity and purity alike of his life, his thoughts and his language — the *absoluteness* of his faith, and the essential saintliness of his character. In this county, where he labored so long and so faithfully, his memory is held sacred in many a hamlet, and at many a secluded hearth."

T. L.

THE SCIENCE OF ENGLISH GRAMMAR.

By Principal William Harkins, B. S., B. L.,
of the Dunkirk Union School.

In taking up a subject so ably treated before, I entertain no expectation of saying any thing new, or even presenting old things in a new manner; in doing so I am induced simply by the belief that truth, to be accepted, needs to be often and earnestly restated, and that nothing is so favorable to the progress of error as the silence or indifference of thoughtful men. I have chosen the subject of English grammar not so much because I thought it important, as that it is one to which I have paid more than ordinary consideration. It was not until I began to turn over the pages of previous reports that I became aware how frequently this body has had its attention called to this subject. I take up my task, however, the more willingly that I am not without precedent, counting this fact a testimony of general interest in the subject.

The present is eminently a scientific age. To be satisfactory now all thought and inquiry on a subject must be more or less scientific. Men must not only think, but they must think logically; they must not only write, but they must write with method and plan. And this is the case on subjects relative to education as well as others.

It is no longer a proper criterion of a text-book that it be a cyclopædia of useful information, or a scrap-book of diverting novelties. Compilations are no longer satisfactory.

In accordance with this scientific spirit of the age, a great improvement in the character of our text-books has been made during the last few years. Many are now all that could be desired, as, for instance, the admirable works of Dana and Gray. But with many, *dry-as-dust* and *fogyism* have not yet yielded to improvement. Perhaps no more striking illustration of this remark can be found than that exhibited by our English grammars.

No people attach more importance or pay more attention to the study of their own language than do the American; and yet with none other is the *science* of grammar so neglected. There has been

less distinct improvement in this department than in any other. From Lindley Murray to Goold Brown the science of English grammar has made no essential progress. All that has been done has only been so much veneering. The increase of publications has been only an increase of this evil. It is not that we have not enough materials at hand. Both English and German scholars have of late years added largely to our knowledge of the history of our mother idiom, and done much to make the production of a good grammar possible. Nor is such a production an unrecognized want. Whoever shall succeed in this attempt will not lack a publisher or a public long. There have been plenty of attempts, but what one has been successful? If we are asked to name a good English grammar, do we not always evade the question by giving the best? Any one who has taught knows how insufficient our present grammars are to make a grammarian, and how much depends on the living teacher. How tedious to master their details and complications! Who is not surprised that as much time is required in our graded schools to acquire the deficient knowledge of our own language called English grammar, as is devoted to the study of arithmetic? And yet the explanation of this fact is to be sought not in the nature of the study itself, but in the irrational and unscientific character of its treatment. What is there in grammar that children of ordinary intelligence should not readily learn if properly taught? Children are naturally analytic, and if rightly led by the spirit of investigation will often anticipate the details of grammatical analysis, and even expose the unobserved errors of older thinkers. The love of truth in a child is marvelous, and the spirit of inquiry that it prompts can never be satisfied until it has probed deep into a subject, and plucked the heart, so to speak, from it. This truly scientific spirit finds its chief discouragement in the contradictions and falsehoods of instruction. Nothing so delights children as the discovery of a truth, or the presentation of a new idea — nothing so discourages them as finding some day they must unlearn something they have previously learned. What teacher that is not more anxious to avoid mistakes, than to give new instruction?

The defects commonly observed in our English grammars are of three kinds. First, unmethodical treatment; second, inexact definition; third, incorrect classification. How many of our grammars begin with the so-called *articles*. How few of their definitions are entitled to the name, and are not a mere patchwork of empirical statements and contradictory classifications. Who can point to the

book in which the analysis of the verb is not loosely given? Another defect, though perhaps less commonly noticed, is ignorance. We have plenty of speculators, clever wits, who have tried their hands, but few profound scholars. When we reflect that the English language of to-day is grammatically composed of two elements — the French and the Saxon — and that it is to the long and desperate struggle for mastery between these two elements, not yet entirely ended, that the peculiar formation and structure of our English idiom is due, we cannot but express our astonishment that any man should presume to write an English grammar without a careful study of at least the Germanic element, and an intimate acquaintance with the history of its modifications and changes. Our idiom is largely Saxon, yet who can point to a grammar, I mean a practical school text-book, which is based on a familiar study of early English?

My last general criticism before proceeding to special suggestions is, that our grammars are at present insufficient in matter to give broad and comprehensive ideas of the genius and spirit of the English language. It should be so enlarged that its study be a substantial basis of rhetorical art. It should classify the various phenomena of our language — such as the peculiarities of prefixes and suffixes, the position and use of adjuncts, the interchange and various relations of equivalent phraseology. It should teach the art, as well as the science of speech. At present, how can a foreigner be guided in the use of prepositions or auxiliary verbs? Certainly not by any assistance of our school books.

I am conscious that it is easier to criticise than improve, to pull down than to build up, and that it is unfair to do the one without attempting the other. Accordingly, the rest of my efforts will be to make some practical suggestions of improvement in our grammatical text-books. I sum up my criticisms by a statement of what I deem to be the essentials of a good English grammar. First, it must be logical and systematic in its method and plan. Second, it must be thoroughly scientific and accurate in its definitions. Third, it must be founded on the basis of Anglo-Saxon and the historical development of English therefrom. Fourth, it must be comprehensive and thorough.

My first suggestion would be to exclude orthography and prosody from our grammars. The former belongs to the spelling-book, the latter to works on rhetoric. I do not object, however, to punctuation, which I think should be taught with analysis. There should be but one book for both beginners and advanced students. Accord-

ingly, I would divide the text-book into two divisions — the first to contain the general principles, the second to contain whatever else might be appropriate. The first division might be subdivided into two parts — one to be the grammar of words, the other of phrases, clauses and sentences. In the second division, these two might be considered together. As to order, the noun and verb, the principals of a sentence, should be treated first. The usual distinction of etymology and syntax should be preserved.

But character is far more important than order of instruction. To the definitions, the method of presenting a subject, and the correctness of the classifications, far greater importance is to be ascribed. Instruction may be of two kinds, which, for want of better terms, I will name dogmatic and suggestive. The one states a fact simply and solely, the other induces it from observation and judgment. Both result in knowledge, but the latter is a far superior method. Modern teaching is growing to be more and more of the suggestive character. In the normal method it is carried to its highest state.

Every definition, every classification should, I think, be deduced by a process of examination to be followed by the student, before its statement be given. But whatever be the method, absolute uniformity should be observed.

In classification, it should be remembered that English grammar must be considered as partly inflectional, partly logical. The Anglo-Saxon could be wholly treated inflectionally, modern English cannot. Thus our classification as to gender is mainly logical. Inflectionally, we have only two cases of nouns, and but two moods. Every classification should be systematic. Things that are co-ordinate should not be subordinate, and *vice versa*. To secure this, tabular views are indispensable. Beginners should always be taught by their use. System in presenting knowledge will be in itself an education to the student.

To class a part of speech differently in different parts of a work is a serious error; and yet one of our most popular grammars does this in many instances. And here I enter a protest against the absurd classification of the possessive cases of nouns and pronouns as adjectives. If they are nouns or pronouns they cannot be adjectives. Either we should renounce this classification, or relinquish the possessive case.

But "passing strange" above all else, perhaps, is the usual treatment of the verb in our text-books. I have not seen a classification of the verb which was not full of inconsistencies, errors and misjudgments. At the outset, verbs are usually divided into regular

and irregular, or into active, passive and neuter. The first division is based on an accidental property; the second confounds kind with form, and co-ordinates classes, one of which is subordinate to another.

I am prompted, therefore, to present my own method of classification, which, though quite imperfect, I believe to be an improvement in several respects over any yet in common use. I claim for it that it is logical and natural, and greatly simplifies parsing when used. Verbs are first divided into two classes according to kind. These are the active and the neuter. Next follows the division according to office into transitive and intransitive. All neuter verbs are of course intransitive. The third distinction is that of voice, which belongs only to active verbs. Neuter verbs have no voice; intransitive verbs have only the active voice; transitive verbs are either active or passive. Since there are two forms of expression in nearly all moods and tenses, the simple and the progressive, the fourth division as to form is into the simple and the progressive. As to class, verbs are divided into the strong and the weak. The strong are subdivided into those that are complete, and those that are incomplete or defective. The sixth basis of subdivision, that of moods, is the one which has been most misunderstood and blunderingly treated by our grammarians. The early writers on English grammar knew nothing at all of the history of our tongue; even Dr. Johnson was ignorant of the fountain head of English speech; accordingly, they had no guide in their researches, and too often based their classification on speculation and fancy. Thus they bequeathed to us many absurdities. Their mistakes chiefly arose from the non-inflectional character of our words which made it very difficult to determine their true relation. The potential mood was a natural consequence. But a lie, whether consciously or unconsciously expressed, always, sooner or later, demands other lies to prop it up. So it was in astronomy, with the Ptolemaic theory; so it has been in grammar with the potential mood. The infinitive mood was distorted to meet the theory, and afterwards another prop was required and another distortion took place. The preposition *to* was made a sign of the infinitive mood, and to this rule a number of cases were excepted. To-day we are told that such verbs as *bid*, *dare*, *feel*, *hear*, and the like, take an infinitive after them without the preposition. But since the study of Saxon, this and many other errors have been exposed, and the demand is now made that truth be established at whatever cost to former ideas. Not only in Saxon, but also in German and French, the so-called auxiliaries of the

potential mood and of the future tense of the indicative mood are followed by the infinitive mood form of the verb. Analogy as well as history teaches this fact, but men could not learn from the former until the latter had proved it. If we have a potential mood, what is it of? Of the principal verb or the auxiliary? It cannot be of the principal verb, for that is in the infinitive; nor can it be of the auxiliary, for that is defective and indicative. The same objection applies to the future tense. A classification which confounds the meaning of words with their offices, and tense and mood, can surely not be longer tolerated. Let any man attempt to classify the verbal phenomena of our language, and, at the same time, preserve these absurdities, and it will not be long before he will give it up in disgust. Already we see the fruits of this struggle in several grammars that give us a *potential form of the subjunctive mood.* I doubt not that ere long the beauty and simplicity of the historical method of treating the verb will gain it universal use. But two auxiliary verbs can be recognized, *have* and *be.* This enables us to reduce the moods of the verb to the indicative, subjunctive, imperative and infinitive. To these should be added the participle, which has not yet received its proper place. The next division will be that of tense. The indicative will have four tenses, the present, the past, the prior-present, and the prior-past; the subjunctive will have the same number; the imperative of course but one; the infinitive and the participle each two, the present and the prior-present. A division of the subjunctive might be made as to form into the subjunctive proper and improper. The true infinitive should be the one used without the preposition, while the form with the preposition should be distinguished as the gerundive. The participle should be subdivided as to office into adjective, noun, and participle proper, the adjective and participle being distinguished as active or passive. The classification as to person and number is the same as that of the best grammars. The imperative in English has no third person, nor can it be properly said to have a subject.

Before reaching this point, doubtless, this question has been suggested to many, if we accept this classification what shall we do with the future and potential expressions? shall we discard them from our grammars entirely? By no means, I answer. Although not strictly auxiliaries, they are different from other principal verbs. They are a part of a form of expression whose recognition should be made in analysis if not in parsing. Verbal expressions are of three kinds. 1. Inflectional, as in the sentences, I love, I loved

2. Auxiliary, as I have loved, I had loved, I am loved, I was loved, I am loving, etc.; 3. Compound, under which head I include the future forms, shall and will love, the potential, may, can, etc., love; the emphatic, do love; the imperative, let him love, go love. In all these cases of compounds the infinitive forms an essential part. In parsing, therefore, the student has only to observe whether the expression has an infinitive or a participle to determine its analysis. I am aware, however, that explanations of this classification should accompany it, especially for teachers who have studied only English grammar. But this would only be supplying a deficiency of present text-books already sensible. Remarks should be given to show the derivation of the possessive case forms of nouns and pronouns, the gerundive form of the infinitive, the future, potential and other verbs, without which none of these can be fully understood. It is unnecessary to state that such remarks must be founded on Anglo-Saxon.

In concluding, I will add but one other suggestion, that our grammars should devote more space to analysis. It is not etymology so much as phraseology that reveals the true genius of English speech, that studies the interchange of expressions, notes elliptical and exclamatory forms, inversions, co-ordinations and subordinations — properties which give strength, flexibility and freedom to the language of Shakespeare above any other. English grammar should be truly the study of the English language, and should seek to discover both what that language is and what it is not. I cannot tell how others regard this subject — to some it may seem unimportant, but I grow daily more impatient to behold the *coming* English grammar.

POSITIVE AND NEGATIVE TERMS IN MATHEMATICS.

By Professor William D. Wilson, D. D., LL. D., L. H. D.,
of Cornell University.

Although mathematics is regarded as the most intelligible and well established of all branches of knowledge, it is, nevertheless, a fact beyond dispute or controversy that several of its most fundamental doctrines or principles are still unsettled, and not at all well defined. I have before me some ten or fifteen books written by the leading mathematical authorities of this country, and nearly as many more from the old world, and yet no two of them agree in their definition of number or of quantity — except in the cases where they have avowedly or obviously copied from one another. Nor has any one of them given a definition of either of those terms that will at all satisfy the recognized laws and logical demands of a real definition; they have all made the mistake of assuming that number and quantity are concrete terms, and tried to define them accordingly. But the terms are abstract, and the mistake thus made at the outset will of necessity render their undertaking a failure, and will moreover introduce discrepancy, confusion and unintelligibility into their discussions.

I will not, however, take up any portion of the time allotted me in citing and criticising the "*definitions*" referred to. I will rather proceed to the work before me. Before doing so, however, I must make an effort to ascertain the meaning and logical quality of the two terms that have been mentioned, namely, "number" and "quantity."

I say, for example, "there are a number of men before me." But what do I mean by the assertion? what is the meaning and office of the word "number" in the proposition? Of course, the assertion implies that there are men before me, or at least that I think there are. But, waiving the ontological question as to the reality of their objective existence, the word "number" is doubtless used to indicate that there is more than one man — that there are several or many. But, suppose some one should ask me how many there are,

I might indicate precisely their number, as five, ten, twenty, etc. In this case, I take the word number to denote the *how-many-ness* of the objects referred to. We have now our definition: "number" is a word used in reference to objects, one or more, to denote their how-many-ness, or how many of them there are. It may be used indeterminately, as when we say, "there is a number," or determinately and definitely, as when we say "there are ten, fifty, or a hundred," etc.

But again, the figures and symbols of numbers used to represent numbers are often called numbers also, by a sort of metonymy, as when we speak of the characters 3, 4, 5, as numbers. But I pass this for the present.

"It has been much discussed," says one of the greatest of American authorities — Davies — "whether one is a number or not." But the answer depends upon the use of the word. In one sense it is a number, and in another it is not. We have a series of symbols or digits beginning with 0 or zero, and proceeding with 1, 2, 3, etc., up to 9, and so on until we come to another symbol that must stand beyond and after all of them — 8 — usually called infinity. But zero or infinity are not numbers at all; the rest are.

And yet, in a popular sense of the word, one is not a number, because it implies one and no more. In this use of the word, we mean by a number several — more than *one*. In this view, one is not a number, two is not much a number, and three is not a great many.

But 0, zero, is no number, for it denotes nothing — the absence of any reality that can be called or counted as one. It cannot be reckoned, estimated or included in the scope of any general term. For a reason equally good, though entirely different in character, neither the symbol of infinity 8 ; nor infinity itself can be regarded as a number. Any *number* can be reached by counting — by addition or by multiplication. But infinity cannot be reached in any of these ways — it is beyond their scope and power. And, consequently, both zero, 0, and infinity, 8, are to be considered as not subject to the laws of number and computation. Their use, when numbers are required, leads, in every instance, to the most obvious absurdities.

Hence, there can be no *negative* numbers. The very expression sounds strange. I do not remember having heard it. The combination of that adjective with this noun is a solecism. We speak and hear of negative *quantities*, but not, I think, of negative numbers.

What, then, is quantity? If we have been right in defining number, verbally, as the how-many-ness of several objects, we shall not err if we define quantity as the *how-much-ness* of an object considered as one, an undivided and indivisible reality.

It is indeed true that all objects in nature are naturally and physically considered as made up of parts or particles. And even if they were not, we could easily imagine them to be so made up, and then of course each of them, whether real or only imaginary, would be subjects of number or how-many-ness, and the number would become the measure of the quantity. Thus, if we were speaking of a string, and one should ask how long it is (length being a species of quantity), we might answer a yard, ten yards, thirty inches, etc. Or, if we were inquired of in regard to a sum of money, using the word in the singular, we might say so much, or using the word dollars in the plural, we might answer so many dollars, as the case might require.

We *count* for number, but we *measure* for quantity.

When there is nothing we can neither measure nor count. But with *one* object we can begin to count, with two we can proceed further, and by a single character or digit we can denote the one or the two, and so on until we get to ten; and then, instead of inventing new digits or characters, we double those we have until we get to one hundred, and then we triplicate them, and so on, the number of figures used increasing with the increase of objects to be denoted. And when we have several numbers we can add or subtract, multiply or divide. But neither by counting, adding or multiplying can we ever get a number we cannot notate by this means, using the nine digits so-called and zero. But we find no number that requires or even can be denoted by 8. Zero represents nothing in the region of either reality or imagination; the symbol of infinity denotes nothing in the region of reality — its object is found in imagination alone. Thus we have a series beginning from — not *with* — zero, as 1, 2, 3, 4, etc., and we might go on inventing and increasing digits or symbols for numbers more than nine until our figures should become as numerous as the Chinese alphabet or the stars of heaven; but at each end of the series, before them all and after them all, would stand the zero and the symbol of infinity, both and alike outside of the bounds and limits of reality, and even of possibility.

But for quantity we measure: and primarily every object is a unit of measure for itself. And for the purposes of practical life as well as for those of analytic mathematics, it becomes necessary to assume

certain well-known units of measure, as the foot, the inch, etc., the ounce, the pound, the quart, the gallon, etc., according to the kind of quantity. And then we denote quantity by the terms and symbols of number. The line we regard as so many feet long, the mass as so many pounds weight, etc. Nay, we can suppose the line itself to be made up of points — the surface of lines and the solid of surfaces. And this conception of them is not only fundamental — it is essential to the analytic methods in mathematics.

But we have not yet found any *negative* number, nor even a negative quantity, and no occasion for the use of negative terms. How shall we find them?

In arithmetic when we deal with numbers we have no occasion for negative terms or negative signs. If we have occasion to subtract or take two from four, the thing is easily done, and we have the remainder, two. But if the proposal be to take four from two, we ask what cannot be done. We can take from a cup no more than there is in it. But in algebra, where we deal with numbers of unknown value, represented by symbols, it is not always known which of two numbers represented by the letters as x and y is the greatest. Hence, we must have the sign minus; and for the convenience of the thing we call the term that follows it in a polynomial a negative term. And sometimes we must be able to separate this term from others, and use it by itself. So, too, we must often use it as representing the result of a supposed process of taking a larger quantity from a smaller.

Again, in measuring for quantity, we can, for the most part, begin with the beginning of the reality of what we have occasion to measure. But in other cases we are obliged to begin with an *assumed* starting point. As in the thermometer, for example, we have no absolute zero of cold. Hence we assume one, and reckon both ways from it, calling the one above or positive, and the other below or negative. In analytical geometry also, we assume an origin of co-ordinates, and reckon distances in one direction from it as positives, and those in the other as negatives.

Hence, it is manifest that in mathematics we have really two kinds of negatives — the one may be called for the sake of distinction the algebraic, and the other the geometric negative. This distinction is of more than mere theoretical importance. With one or two illustrations of this difference, I will close this paper.

Suppose that in an algebraic equation we have a polynomial with two terms $+x$ and $-x$, we should cancel them at once on the ground that $x - x = 0$, or that $-x$ and $+x$ added together amount

to nothing. Here we have the case of the apparent absurdity that the sum and the difference of two quantities are the same, and are both alike equal to zero or nothing, whatever may be the value of the quantities, provided only that they are equal, and are affected one by the positive, and the other by the negative sign.

But in the case of the geometrical negatives it is otherwise. Suppose we have x and $-x$, denoting two points on the axis of abscissas — the sum of the two is double the value of each. And so, too, the difference between them is the same as the sum of the two — that is, it is double the value of each taken separately. Thus on the scale of a thermometer four below zero and four above, are equal both as a sum and as a difference to eight, and not to nothing merely, as would be the case with mere algebraic quantities affected by the corresponding contrary signs.

The most important difference, however, between the kinds of negatives comes into view in its application to multiplication. The doctrine in algebra is that the product of terms affected by like signs is positive, and that of terms affected by unlike signs is negative — that is, the product of two negative quantities is positive. I suppose every student in algebra has felt the difficulty of comprehending this rule. And I presume every teacher has tried his skill at explaining it — some few of them with satisfaction to themselves — very few, I apprehend, with entire satisfaction to their pupils.

I suppose it to be strictly true in the niceties of the matter that we cannot multiply by a negative quantity at all. The multiplier really indicates the number of times a quantity is taken. And if it is "taken" no times, it is not taken at all. And the case can be no better and no worse in this direction, with reference to the question of taking it less than no times.

We have all heard of the question, "how much is twenty-five cents multiplied by twenty-five cents?" We can multiply twenty-five cents by any *number*—but not by "*cents*" at all. The multiplier must be a number and not a quantity.

Of course, *in practice* it makes no difference in case one factor is a negative, whether we *regard* it as multiplier or multiplicand — for $3 \times \div = 4 \times 3$. But for an intelligible explanation of the process it is necessary to regard the negative term as the multiplicand, and as representing a geometrical negative, and then the explanation is easy and intelligible.

But in regard to the rule that a negative multiplied by a negative gives a positive, or the product of two negatives is positive — taken

without limitations and unqualifiedly, the rule is not true. This admits of an easy demonstration.

I suppose it will be conceded that $4 > -4$. Otherwise we have $6 + 4 = 6 - 4$, which is absurd. If now four is more than minus four ($4 > -4$), then if the rule be true $4 \times 4 = 16$, and $-4 \times -4 = 16$, also, that is, the product of the two smaller numbers is equal to that of the two larger ones.

Or if we would have the illustration in another form, let us take the polynomials $0 + 4$ and $0 - 4$, thus:

$0 + 4$	And so, too:	$0 - 4$
$0 + 4$		$0 - 4$
$0 + 0$		$0 - 0$
$+ 0 + 16$		$- 0 + 16$
16		16

What, then, perhaps you will ask, becomes of the rule? I answer in the first place, that when terms represent *geometrical* negatives they are really as positive as the so-called positive terms themselves, and when multiplied by each other they represent a parallelogram which is as real as that produced by the multiplication of positive terms.

But in the second place, when the terms occur in algebraical polynomials, the rule holds true with regard to them, and should be stated with that limitation, namely: "In the multiplication of polynomials, when we are using terms of unlike signs, the products should be regarded as negative, but if the signs are alike, the product of any two should be regarded as positive, even though the factors are both negative, or are preceded by the minus sign respectively."

The only proof that this rule admits of, so far as I know, is the purely arithmetical one. Thus, suppose we have two polynomials, $6 - 2$ and $5 - 3$. We know by actual subtraction that the value of the first is 4, and that of the latter is 2, and that the product of the two is eight, six, or $2 \times 4 = 8$. If, however, we treat these as polynomials, we find the following:

$$\begin{array}{r} 6 - 2 \\ 5 - 3 \\ \hline 30 - 10 \\ - 18 + 6 \end{array}$$

and combining and reducing by the rule we get 8 for the product as before. And the same result will be obtained in all similar cases.

Thus limited, the rule is perfectly intelligible, and admits of the only proof that I have seen of it that at all deserves the name of proof. But taken without this limitation the rule is untrue.

The method of illustration which I have pursued in this paper I believe to be the only true and satisfactory method, whether in metaphysics or mathematics. It consists of an appeal to the facts and real objects in nature. It is with such objects and such only that we deal whenever we seek for or deal with truth. Words and figures, the digits in arithmetic, and the letters in algebra, are only signs or symbols of objects. If we say one, two, etc., the words are only adjectives, and by the syntax of all languages as well as by the fundamental laws of thought, and the very logic of language itself, they imply nouns after them; so that we may ask one what? two what? And for the purposes of mathematics, and for mathematics alone, it makes no difference what the objects are—two pebbles, two acorns, two men—or what not. Hence no harm or error can come to *the mathematician* from neglecting the nouns altogether, as in practice we do, and use the numeral adjectives, as though they had no nouns and needed none. But in metaphysics it is otherwise — there we deal with, or should deal with, things and realities alone, and the nature of the things as indicated by their names and as determined by their essential properties, are fundamental and of essential importance. If, for example, one speaks of "the infinite" for the purposes of metaphysics, we must know what infinite thing or object he means before we can either assent to or answer what he says. There may be an infinite Being — of course, I believe there is — and if so, He is ONE indivisible, and subject to the laws of number only as an indivisible Reality. But there is no infinite number — we cannot reach infinity or infinite number by counting. We could not express or enumerate it if we could. Addition cannot give it — multiplication cannot produce it. It is unmathematical — out of the reach and sphere of number and calculation, and the sign of it, like zero, is a mere symbol to indicate something that is, or at least is supposed to be, beyond the limits of enumeration and mathematical discussion.

THE INSTRUCTION OF DEAF-MUTES.

By Mrs. Charles Kelsey,
of Cayuga Lake Academy.

In this country, the instruction of deaf children is conducted by the use of either the French method, or the German method. The German method is that of articulation and lip-reading; the French method is that of the sign language.

The German method is often spoken of as the new and improved method of instruction. In this country, I believe it may truly be considered the improved method, and to us it is new, yet when we trace it back to the year 690, it can hardly be considered a modern invention.

As early as 690, John, Bishop of Hagnulstad, taught a deaf-mute to articulate.

In the sixteenth century, the monk, Pedro Ponce de Leon, was so successful in teaching deaf-mutes to speak that one pupil became a priest, and another an officer in the army. Of this teacher, Valles in his De Săcra Philosophia, published in 1588, says: "Pedro Ponce, a monk of St. Benedict, my friend, who, a wonderful thing, taught persons born deaf to speak." And in the mortuary records of the monastery it is said of Ponce de Leon, "he taught mutes to speak."

In 1667, Von Helmont, in Holland, published a work explaining the art of lip-reading. In the latter part of this century, Emanuel Philibert, Prince of Savoy, born deaf, is said to have learned to speak four languages.

Dr. John Wallis, at Oxford, in the preface to his Grammar of the English Language, asserted that he had taught two deaf-mutes to articulate distinctly, and, a more difficult matter, to understand the meaning of language.

In 1749, Pereira, a Spaniard, exhibited some of his deaf pupils before the Academy of Science at Paris. His success was then considered remarkable. His pupils could readily answer questions in writing or orally. They mingled in society, and conversed with the voice. But unfortunately his mode of instruction was lost to the world, his papers having been destroyed by fire.

Samuel Heinicke founded in Liepzig, in 1772, the first school for the deaf-mute ever opened under the auspices of civil government. This school is still in existence, and Samuel Heinicke is justly regarded as the founder of the German method of instruction.

Here, then, is the origin of the German method, and our present mode of instruction in articulation and lip-reading is founded on principles then enunciated. It is, however, no part of my plan to enter upon a philosophical address upon the theory of the method, nor do I for a moment imagine your worthy chairman expected any thing so imposing when he invited me here.

It is a saying of the times, that each one can work best in his own harness or path. However much I may be able to do in my own class-room to assist the children of silence to take a position beside their more fortunate brothers and sisters, I can do or say very little here to interest you, unless I can induce you in imagination to take a seat in my class-room. Never fear a little chalk and dust, it will rub off long before you will forget the bright, intelligent faces of my pupils, or the pity you feel for them, as you remember that no sound can ever pierce those closed ears, till the new life shall dawn upon them. If you please, we will begin at the beginning, and teach the sounds of the alphabet to an uninitiated pupil. Do you see our little pupil coming up the walk, led by his father or nurse, perhaps? He is as perfect in form and feature as any child on the school-ground, and yet you detect a blank look, possibly, that leads you to think him a stranger to the ideas and knowledge that children of that age commonly possess. To us there is always a saddened expression, as though — although he does not comprehend his loss — nature has stamped the expression of his features in keeping with the misfortune she has put upon him. He is brought into the class-room more like a frightened kitten than like a human child making his important debut at school; very likely we find it necessary to turn the key in the door until, armed with a picture book or something equally attractive, we can make friends with the shy little stranger. He has come to us without knowing any thing in the world, feeling a strong attachment for father, mother and home, and an intense dread of strange faces and places. We must begin his lesson as much with a view to amuse as to instruct. Taking a bit of paper, we place it on the back of the hand, and with the mouth near it, we give the sound of the letter P, with force enough to send that bit of paper flying into the air. In nine cases out of ten, the little pupil will try the same experiment, and give the correct sound of the letter. Next we will show the little fellow that we can do

the same thing without closing the lips, and by showing him the motion of the tongue we get the sound of T. H and S are but expulsions of air with the mouth in proper position. Next we will try the articulate sounds. Our little pupil is easily attracted by the round shape of the mouth, so like the letter O we have put upon the board. Placing one of his hands upon his own throat or chest, and the other on mine, he feels the vibration when I make the sound, and soon imitates it. OO and W are the same, only that the lips are drawn into a smaller circle. For E, the vibration can be felt under the angle of the jaw, or on top of the head, or back of the neck. In giving M, the pupil will see that the lips are closed, and at the same time he can feel the vibration on the throat and nose.

Thus we pass through the alphabet, finding for each articulate sound some place upon the throat, head or chest, in which the vibration of that sound can be distinctly felt.

I do not mean to convey the idea that we have only to give all the sounds, and our unfortunate pupil can at once imitate us. Happy, indeed, would it be for both teacher and pupil if this were the case. But for some sounds we may try weeks before they are mastered, and then only by holding the pupil's tongue in proper position while he gives the sound. K and G hard, usually give more trouble than all other single sounds, and many times can only be mastered by first teaching the sounds of T and D, then letting the pupil give these sounds, at the same time pressing the tongue down with a paper folder.

Mr. A. G. Bell, whose name in the last two years has become very familiar to all teachers of the German method, would tell you that "mechanical assistance has been found to be so absolutely necessary, that a manipulator of convenient shape has been constructed of ivory." The manipulator usually employed is a paper folder, occasionally a lead pencil, and semi-occasionally the flat handle of a fruit-knife.

The "mechanical assistance" is the unromantic effort to put the pupil's tongue where you want it, and to keep it there.

As soon as he has learned a few sounds, we drill our little pupil in combining these sounds, regardless of sense. Soon we pass on to short nouns, finding no trouble with these, excepting where silent letters occur, or the sound of another letter is to be substituted for the one given. When C occurs, we substitute K or S. As soon as we can take longer words, we write the word, and then write its pronunciation, carefully dividing the syllables.

I can assure you that a few weeks spent in my work will give any one a desire to write a new spelling-book, in which the words shall be spelled as their sounds indicate. Another annoyance in our language is that the same combination of letters may have several different sounds, and that the same word is used in so many different senses. When we teach a word we try to show in how many different ways the same word may be used.

The ingenious teacher possessing tact enough to adapt to her use any means or way to make herself understood, is a *treasure* in any school-room, but a positive necessity in a school of deaf children. I call to mind now the rather doubtful compliment of an honest-hearted nurse-girl, when I had become more than usually animated in my efforts to make her little charge understand some idea that I was trying to teach him; when, with sparkling eyes and cheeks aglow, she assured me that I would make "a splendid *actress*."

Yes, my dignified friend, your elegant repose of manner may be very desirable in the circle of the drawing-room, but in a class of deaf pupils it is surely at a discount. One Monday morning, a bright, deaf boy of 14 years astonished me by declaring that he did not like to hear our Rev. Dr. in the Presbyterian church preach. In answer to to my amazed "why not?" he at once assumed the erect, dignified attitude of the Dr., and with his hands behind him, and a bit of paper before him, he proceeded to imitate the Dr.'s quiet delivery of a sermon. Then taking another attitude, and freely using both arms, now and then striking the supposed pulpit, he assured me he liked to hear the Methodist minister preach, for he could *feel* what he said. Demosthenes urged *action* as the essential idea of oratory — even more is it the essential idea of the instructor of the deaf.

When teachers can take their bundle of ideas and travel in the broad highway of hearing, straight to the city of intelligence, they can march with stately and dignified tread if they choose, but if that natural highway is blockaded, and they must crawl along in the by-ways of sight and touch, they must make every thing bend to the necessities of their position. But for all their labor they have their reward. I have no expectation that the music of Heaven will ever sound sweeter in my ears than has the correctly spoken word of some *poor*, deaf child, when, perhaps, I had worked weeks to get that word properly articulated.

And, then, the pleasure of hearing those faulty sentences, when our little pupil first tries to express his ideas for himself. Not long since, when such a little fellow had his recess, he stepped into the hall, and being possessed with the spirit of mischief, took the hat of

another boy from its hook, and threw it on the floor. As soon as I was informed, I led the little offender back to his seat, explaining to him, at the same time, that our recess was intended for good boys and girls. The little fellow sat there a few minutes, his slight proportions fairly swelling with his grief and desire to promise better things, when, choking back a sob, he said: "Mrs. Kelsey, I sleep one, come, throw hat, no ma'am." Here was a sincere promise to do better the next day. His idea of future time is after he shall have slept one, or any number of nights.

But how are the more advanced pupils taught? As nearly like hearing children as possible. Questions are pronounced to them as to hearing children, and they are required to answer orally, and then to write their answers on the board. New words are carefully explained, and great pains taken to see that the idea is grasped.

The older pupils manifest great interest in our weekly bible lessons, believing with unquestioning faith whatever of God's word they are made to understand. Our lesson a few weeks since was in the 119th psalm. The psalmist declares that it was good for him that he was afflicted. The lesson was written on the board, but the word *afflicted* was not understood by any one in the class. My first work was to make the pupils comprehend *that*, through something that they had fully *understood* and *felt*. To one, I explained that when her mother died, her family were *greatly afflicted*, to another that when his two beautiful sisters died, his father and mother were *afflicted* and *sad*, and to another that when he was *ill* with the fearful disease that left him deaf, he and his parents were *greatly afflicted*, and in a second the cry came from each, "*but why is it good?*" This, of course, was as difficult for them to understand as it has been for sorrowing human nature all the world through; yet I left the class-room that day feeling that they, at least, comprehended it as well as I did.

In this method of instruction it is all-important that the child begin *young*, in order to have a *pleasant* voice. I have had pupils begin at the age of 14, and talk so that their relatives and others accustomed to their voices could understand without difficulty every thing they said, but I have yet to see one beginning to speak for the *first*, at that age, who has an agreeable voice.

Lip-reading also holds an important place in the German method of instruction, and for this, too, we believe it is very important to begin the instruction young. When we teach a deaf child to give the sound of a letter, we also teach him to make the letter, and read it from our lips. In this respect and in the size of their classes and

schools, we consider the State institutions using the French method, but employing one teacher of articulation, defective. Not that we wish to speak against those noble institutions, which have stood for years with open doors, as ready to receive the unfortunate children from homes of poverty and degradation as from homes of plenty and refinement. All honor! all honor! we say to these noble institutions, and to the States that support them. Yet they labor under some serious disadvantages. We call to mind, now, one case which comes under our own observation. A bright, intelligent lad, after he had learned to read and spell in his native village school, became deaf from scarlet fever, and was then put into a State institution for the deaf and dumb. He at once gave up expressing himself orally, and used signs. When he finished his course of study at the institution, he became a teacher there. Since it has been considered expedient to keep one articulating teacher in each sign school, on the ground that speech is a desirable accomplishment for the deaf, but not *wisely* used as a means of instruction, this semi-mute teacher, with a little assistance, has acquired this accomplishment, and speaks very well indeed; occasionally accenting the wrong syllable, but is generally well understood. Now, the unfortunate part of this is, that he cannot read one word from the lips of others. When last we met him, we urged him to give his attention to lip-reading, telling him that few would think of his being deaf if he could only read the lips. His answer was, that in the institution so many of the teachers as well as the pupils were deaf, and signs were so constantly used, one had very little opportunity to learn lip-reading.

Years ago, when that boy became deaf, he had mastered the English language, and all he needed was to learn lip-reading to place him on a footing of comparative equality with hearing children.

A young lady, who has been my pupil, writes: "I can hardly believe I am deaf, I am invited out so much, and my friends all say they never heard one deaf speak so well." It is, indeed, something over which frail humanity may rejoice, that children falling victims to these fearful diseases may have the misfortune in a measure overcome, and be restored to society and usefulness.

Deaf-mute classes should not have more than six or seven pupils, for each pupil must receive individual instruction. I know that, at the present time, whenever the subject of deaf-mute instruction is brought up, there is a contest or argument as to which is preferable—the sign, or the articulating method. To me such an argument seems a waste of time; if the child can be taught to speak, who would for a

moment hesitate as to which is the most desirable. If the child cannot be taught to articulate, let us thank God for even the medium of signs.

Then, with regard to the management and discipline of deaf pupils. I have been asked by teachers and by parents of the deaf if I did not find that deaf children, as a class, naturally have worse dispositions than hearing children. It is strange, indeed, if our Heavenly Father picks out the poor, deaf child on whom to load an undue proportion of ill-nature and sinfulness. I believe the teacher will usually find these poor children more difficult to control than hearing children, but this is due to the fathers and mothers rather than to the child's natural disposition. It is a lamentable fact that three-fourths of the deaf children are indulged at home in a manner that would ruin, or render intensely disagreeable, any hearing child, in the family, and that, too, from a mistaken idea of kindness and pity. I dare not say that if my Heavenly Father had given my own little son to me ten years ago, with so fearful a heritage as deafness for his portion, I should have managed more wisely than other fathers and mothers; but with the experience I have now had, I feel that if a child is to grow up, and go through life, deprived of hearing, no *pains* or *pain* should be spared to render that child's manners, and disposition, and general appearance, as pleasing and lovable as may be.

I cannot favor any school that shuts deaf pupils away from hearing children, and fosters clannishness. Our object should be to fit them to live and associate with hearing people, not to live by themselves. I would that every academy in our State had suitable provisions for a class of deaf pupils, and that each pupil there could receive necessary aid, the same as in our State institutions. You ask if I realize the enormous amount of labor and money it has taken to rear those noble buildings, of which Americans may justly be proud? Indeed, I am not unmindful of all this; yet I have such implicit faith in the *cause* I advocate, and in the American people, that I believe the day is rapidly approaching when deaf children will be provided for on an entirely different plan from that now adopted. And I believe, while deafness may be as universal a calamity then as it now is, it will not be rendered two-fold by throwing away speech also.

Our Saviour did not reprove the servant who had but one talent for not improving five, but for neglecting that which he had. Can we be justified in neglecting to teach a young child to speak, if the

vocal organs are perfect, because the poor child has already been deprived of hearing?

No! no! this must not be; put your deaf children side by side with hearing children; let them associate in the family, the school, and on the play ground. It is true they must receive individual instruction, from a teacher who understands her work and her pupil's needs, but in *this* way I believe their misfortune may be overcome to a greater extent than in any other. I pray you, whose influence has been for years so powerful and well-directed in every advance in the cause of education, give this subject your careful attention.

REPORT OF THE DEPARTMENT OF MECHANIC ARTS OF CORNELL UNIVERSITY.

This department was organized at the very opening of the university, with the view of complying with the requirements of the fourth section of chapter 130 of the laws of congress, passed in 1862.

The provision of the act is, that in all the colleges which receive the benefit of the grant "the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in such manner as the legislatures of the States may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life."

"Professorships of industrial mechanics and physics, civil engineering, mathematics, languages (French and German), and practical mechanics were early established and filled. Professorships of architecture, shop-practice and free-hand drawing have since been added. Models illustrating mechanical movements, motions, etc., models of engineering and architecture have been imported or manufactured in our shops. A large amount of well-selected machinery has been acquired, and, in 1870, the Hon. Hiram Sibley, of Rochester, N. Y., provided for the erection of a special building for the use of the department. He also gave $10,000 for increasing its equipment, and has since increased his gifts, thus placing it in a condition to do its work in the most satisfactory manner.

"There are now closely connected with the lecture rooms in which the *theoretical* side of mechanics is presented, other rooms for the designing and manufacture of working models and machinery, fitted with power and appliances for working in wood and the metals, in which the *practical* side is presented.

"The machine-shop is conducted wholly as a means of instruction, and each student in the department of mechanics is required to devote at least two hours per day to work in the shop, without pecuniary compensation for his labor, where he will not only obtain theory and practice combined, but will also have opportunities to construct, as well as use, tools of the greatest accuracy.

"Each candidate for the degree of bachelor of mechanical engineering will be required to design or construct some machine or piece of apparatus, or conduct a series of experiments approved by the department, and such as promise to be of public utility.

"Practice will be given in work of the best kind, as well as comprehensive demonstration of the principles of mechanism and experience in the best methods of working." (Registers, 1873–74.)

The department has for its special use a fine stone building, known as the Sibley building. It is 100 feet by 42 feet, three stories and basement, with engine-room 36 feet by 20 feet, at its rear. It contains six rooms 38x40, two on each floor. The two upper rooms are devoted to free-hand and mechanical drawing; both are well equipped with tables, draughting stands, models, designs, etc. The two rooms on the second floor are lecture or recitation rooms, so arranged that they can be thrown into one. They are furnished with seats of an approved style (with rests for note-taking during lectures), blackboards, cases containing models, etc. On the same floor, and over the engine-room, are two private rooms or studies for professors.

The two rooms on the first floor are devoted to the printing-office and machine-shop.

The engine-room contains a steam-engine, a grinding-machine, steam-heating apparatus, etc.

The machine-shop contains 60 feet of improved work-benches (fitted with drawers for containing small tools, working clothes of students, with vises, punch and shears, gas-burners, soldering, etc.), five lathes, two planers, one shaping-machine, one universal milling-machine, one drill-press, two grinding-machines, and a novel steam-engine of 25 horse-power, the invention of Professor J. E. Sweet. The shop is also well supplied with small tools, such as the Morse twist drills, from No. 60 to two inches in diameter, reamers both "flutted" and "flat," from one-quarter inch to two inches, hardened steel mandrils ground to Whitworth's gauge, same sizes, hammers, wrenches, files, etc.

The printing-office contains two power presses for book and other work, and one small foot-press, two cutting machines, three composing tables, twelve cases, about 150 fonts of type, varying in size, from small fancy fonts to fonts of 600 pounds, including fonts for mathematical, German, Greek and Portuguese work.

The department has also a wood-working shop, 28x75 feet, two stories high, situated at the rear of the Sibley building, and containing work-benches, etc., for carpenter and cabinet work.

During the summer, slitting, cross-cutting and jig-saws, a planing-machine, and wood-turning lathes, will be placed in this building.

The power for driving the machinery is obtained from a turbine water wheel, placed in the gorge of Fall creek, about 750 feet distant from and 200 feet lower than the Sibley building, and is transmitted by means of an endless wire cable about 1,600 feet long. The same turbine drives a gang-pump also in the gorge, which forces water to the university buildings, the farthest of which (the Sage) is nearly one-half mile from the pumps.

The department of architecture has its lecture, model and draughting rooms in the McGraw building.

The department of civil engineering has its lecture, draughting and apparatus rooms temporarily in the chemical laboratory building.

The direction of the department of mechanics is placed in charge of "The Faculty of Sibley College of Mechanic arts," which faculty is composed of President White, chairman, Professor practical mechanics, dean; Professor Sweet, master mechanic; Prof. Cleaves, free-hand drawing; Professor Anthony, industrial mechanics and physics; Professor Babcock, architecture; Professor Fuertes, civil engineering, and Professor Oliver, mathematics.

The instruction embraces three courses, as follows:

First. A special course has been arranged for such young men as have a fair knowledge of the machinist's trade, who desire to better prepare themselves for "foreman" or leading positions in their business. Such students may enter the department without passing entrance examination, but are required to devote five hours per day to shop-practice, and four hours daily to machine or free-hand draughting.

The instruction in shop-practice embraces the study and construction of gearing and link work, strength and proportion of parts, accurate surfaces (such as face plates, straight edges, right angles), shop accounts, etc.

In this course, students are allowed the use of the library, the same as all other students, and to attend such lectures and recitations as they are prepared to appreciate and comprehend; such attendance is not obligatory, but a student registering for a course of lectures or recitations must attend and pass the same term examinations as regular students. On leaving the university, a certificate of proficiency, attendance, etc., only, is granted.

Second. An optional course under the direction of the dean. In this course, entrance examinations in grammar, geography, arithmetic and algebra, through quadratics, are required.

Attendance upon ten (10) lectures or recitations per week, or their equivalent, in addition to two hours daily shop-practice, two hours daily in drawing, and the passing of the examinations at the close of each term, are necessary to remaining in the university.

Third. A four years or full course, upon the satisfactory completion of which the student is entitled to the degree of bachelor of mechanical engineering.

The entrance examinations for this year are the same as the preceding, but hereafter six books of geometry in addition will be required.

This course of study embraces:

IN MATHEMATICS:

Algebra, geometry and conic sections. Trigonometry (plane and spherical.) Analytical geometry (of two and three dimensions). Descriptive geometry (with shades, shadows, etc.) Calculus (differential and integral).

IN LANGUAGES:

Daily recitations, readings or conversations, in French for one year. The same in German. Or two years either French or German. In English, rhetoric and composition, twice per week for two terms.

IN PHYSICS:

Two lectures per week during second year. Three lectures per week during third year, and eight (8) hours per week, one term in physical laboratory practice.

IN CHEMISTRY:

Three lectures per week for two terms, and four hours per week laboratory practice.

The remainder of the course is devoted to the special study of mechanics. The instruction being by lectures and recitations using for text-books, Rankine on Steam-engine, Applied Mechanics, Machinery and Mill Work, Willis' Principles of Mechanism, Warren's Machine Construction and Drawing, Auchincloss on Valve and Link-Motion, Weisbach's Mechanics, etc.

The lectures embrace courses on "The Strength and Preservation of Materials," "The Materials employed in Mechanical Construction" (such as cast and wrought iron, steel, zinc, tin, lead, copper, and alloys), "Shop Practices," "Shop Accounts," "Arrangement

and management of Shop and Machinery," "Care and use of Tools," "Architecture," and a special course of "Laboratory Practice in Metallurgy and Mineralogy."

The course in drawing embraces, two hours daily in free-hand, one year.

The same amount in linear drawing, projections (orthographic and isometric), and model drawing.

Two hours daily in mechanical draughting, with shading, tinting, lettering, etc., in all making a complete course of two hours daily, extending throughout the four years.

The same amount of shop-practice is required, but the shop is open and in operation during the month of July each year. Students are advised to avail themselves of the privilege of working in the shop during that month, many of them doing so.

In order to accomplish the amount of instruction named, the entire time, five hours daily, of Prof. Cleaves is devoted to the drawing-room; of Prof. Sweet, ten hours daily to shop-practice; of the dean, three to five hours daily in lectures, recitations and mechanical draughting.

For instruction in mathematics, languages, physics, chemistry, etc., the students in mechanics attend the same class-room exercises as students in other departments, passing the same examinations.

Respectfully submitted,

J. L. MORRIS, *Dean.*

Course of study for the full course of four years, in the department of mechanic arts of Cornell University, arranged by year and term, together with the number of recitations per week:

First Year — First Term — *Recitations per week.*

Mathematics (geometry)	5
Languages (French or German)	5
Free-hand drawing, 2 hours daily	3½
Shop-practice	3½
	17

Second Term — *Recitations per week.*

Mathematics (geometry and conic sections)	5
Languages (French or German)	5
Free-hand drawing	3½
Shop-practice	3½
	17

THIRD TERM — *Recitations per week*

Mathematics (algebra completed)	5
Languages (French or German)	5
Linear drawing, etc	3½
Shop-practice	3½
	17

*SECOND YEAR — FIRST TERM — *Recitations per week.*

Mathematics (trigonometry and mensuration)	4
Languages (German or French)	3 or 5
Chemistry (with laboratory practice)	3
Physics (experimental mechanics)	2
Shop-practice	3½
	15½ or 17½

SECOND TERM — *Recitations per week.*

Mathematics (analytical geometry)	4
Languages (German or French)	3 or 5
Chemistry (with laboratory practice)	3
Physics (electricity and magnetism)	2
Shop-practice	3½
	15½ or 17½

THIRD TERM — *Recitations per week.*

Mathematics (diff. calculus)	5
Languages (German or French)	3 or 5
Physics (electricity and magnetism)	2
Mechanical drawing, 6 hours per week	2
Shop-practice	3½
	15½ or 17½

THIRD YEAR — FIRST TERM —*Recitations per week.*

Mathematics (int. calculus)	5
Descriptive geometry	5
Physics (heat)	3
Rhetoric and composition	2
Shop-practice	3½
	18½

*In this year, if a student continues the study of the language studied in his first year, three recitations per week will only be required, hence languages are marked 3 or 5.

Second Term — *Recitations per week.*

Physics (heat and acoustics)	3
Machine construction and drawing	4
Principles of mechanism	5
Rhetoric and composition	2
Shop-practice	3½
	17½

Third Term — *Recitations per week.*

Machine construction and drawing	4
Steam-engine	4
Mill-work, lectures, etc.	4
Shop-practice	3½
	15½

Fourth Year — First Term — *Recitations per week.*

Applied mechanics (Weisbach)	5
Machine drawing	4
Water-wheels, lectures, etc	4
Shop-practice	3½
	16½

Second Term — *Recitations per week.*

Designing machinery	4
Physical laboratory practice	4
Applied mechanics	5
Shop-practice	3½
	16½

Third Term — *Recitations per week.*

Architecture	2
Field practice with level, transit, etc	3
Special study	4
Working draughts	4
Shop-practice and preparation of thesis	4
	17

JNO. L. MORRIS, *Dean.*

Cornell University, Ithaca, N. Y.,
July 1, 1874.

NEW SCHEME OF THE FUNCTIONS OF THE HUMAN BODY.

By Professor Thomas S. Lambert, M. D., LL. D.,
of the Claverack Academy and Hudson River Institute.

Some points that I shall present are new and cannot fail to have intense interest and value; many of the points are old established truths, which are recapitulated because they will receive new light from the new ideas, and in combination with them they will induce additional thoughts and deductions which will themselves be new data and bases for further advances.

Some of my deductions you would accept; with others you may not at once agree, but you will accept the facts which alone for the most part, time will allow to present.

I shall have served the purpose I now have in view if I shall throw out a few seed-thoughts which your own reflection and judgment will enable you to bring to full fruitage, since you are more capable of making deductions for yourselves than I am of making them for you. Dr. Cruikshank made a good *bon mot* when he said: "I esteem that man most fortunate who, when he has done all he can, has inspired others to do better than he could do himself." This is the point I have in view in presenting this subject before this learned body of thoughtful men and women.

We readily notice that most of the organs of the body have had names given to their functions, which we perceive to be essential to properly understanding them, and for advancing or communicating our knowledge in regard to them, *e. g.*, the function of the stomach is called digestion; that of the lungs, respiration; that of the heart and blood vessels, circulation. But when we come to some of the most important of all the organs in the body, we are surprised to find that no name has been given to their functions; and when we speak about them we must use circumlocution, and that of a very indefinite character.

The result of this is as might be expected, that the greatest confusion exists in regard to the functions of those important organs, and but little progress has been made in a direction which, of all others, great progress is desirable.

It is quite evident that every organ must have a function,— its activity constitutes its function: its activity is not the function of something else but of itself: no organ can be an agent of something else working in or through it, but its own activity is its own function, and whether understood or not, it should be named and considered as related to the organ, as that will of itself do something directly toward attaining the object in view, while it will induce indirectly constant efforts toward unfolding that which is evidently knowable. For if it is definitely decided in our minds that an organ has some function already named, we shall not be satisfied with that obscure glimpse of truth, but shall devote ourselves to its elucidation, and when its function is clearly discerned we shall not assign it to something else, but shall allow it to rest related to its appropriate organ, nor seek for other causes of that for which its organ is sufficient; in the same manner as we do not seek to find digestion performed elsewhere than in the stomach, its chief organ.

The organs to which reference is made are the *ganglia*, or the nervous centers.

For the benefit of non-professional hearers it may be said that the ganglia are the gray, cellular or active portions of the nervous system which form collections or aggregated masses, large or small, chiefly in the brain and spinal cord. Brains, in fact, are largely constituted of ganglia. And as the brains (viz., the great ganglia of the head) are divisible into the right and left which correspond to each other as if twins, as the eyes do, the ears, etc.,—as in fact, and truly speaking the head is double or dual, and not constituted of two halves, the ganglia being thus in dual sets,— the functions of the ganglia must also be dual, which brings out a great practical and important fact or deduction that a person can use, or can learn to use one set of ganglia or the other at option. But of this by and by.

The *nerves* also have not had their functions designated by a name. On account of these defects great errors have arisen, and important truths and deductions have been hindered.

We propose to correct this difficulty. To the function of the *ganglia* we will apply the name *gangliation*, and to that of the nerves, *nervation*, using both terms in a generic sense to include every mode of action of these organs.

We now recall the generic terms, *gangliation*, *nervation*, the first division of which will be into *conscious* and *unconscious*. The former or *conscious* gangliation will include sensation, emotion, intellection or ideation, and voluntary motion. These four include every

mode of *conscious* gangliation, the term for which may be *mentation.* This term is not used as corresponding to mind, or function of mind, as usually understood, but is, as will be perceived, applied merely as a name for those modes of gangliation of which we are *conscious.*

But for this *conscious* gangliation or mentation to take place, it is necessary that there should be a constant *unconscious* gangliation going on within the ganglia preparing them for the ripe fruit of *conscious* gangliation, in the same manner as in a pear which we put in a drawer away from the air and light, there occurs a change which will make it toothsome and delicious.

Besides this, which may be called the *subjective* mode of *unconscious* gangliation, there is needed a constant interchange between the constituents of the ganglia and the constituents of the blood, which function is called organization, and is subdivided into nutrition, which is the building up and maintaining of the tissues of the body, and calorification, the correlative of nutrition, and which preserves the proper temperature of the organs of the body.

For the fulfillment of these functions, substances must be absorbed, assimilated, secreted and excreted, exhibiting the functions, absorption, assimilation, secretion and excretion.

These functions take place in all the organs of the body, each after its own kind. Each organ absorbs from the blood and assimilates substance to itself, each organ throws off from itself or excretes particles that have served their purposes; these functions, as they are called, might, perhaps, with greater propriety be termed properties of the tissues from which the organs are woven. Secretion names the function or property which, not possessed by all the organs, or, more properly, by all the tissues, exists in one tissue. That tissue has the property of assimilating some of the substance it absorbs into its own like, but it has also the function or property of changing part of what it absorbs into a new fluid, called a secretion, its variety depending upon the variety of the tissue that secretes it, adapting it to its office.

For all these functions blood is necessary and must be circulated, giving us the functions of circulation, respiration (requiring *pure* air), digestion (with its demand for *scientific* or appropriate food and *pure* water), elimination and modification,— the four latter being termed blood-making functions, or, collectively, sanguification.

If we now retrace our steps, we see the direct connection between *pure* air, *scientific* food, *pure* water and *conscious* gangliation or *mentation*, to wit: sensation, emotion, intellection and voluntary motion.

Appropriate air, water, and food are necessary for producing good blood, the circulation of which is necessary to nutrition and calorification, or *objective unconscious* gangliation; which is essential to *subjective unconscious* gangliation, which again antedates, underlies, or ministers to *conscious* gangliation.

The great truth is thus shown that we must learn what to eat, how to cook it, how to breathe, how to drink and what to drink; but, in addition, teachers and professors must ask and answer the questions: What effect upon the ganglia and upon gangliation is produced by the several studies and by the methods of their pursuit? What effect does the study of mathematics have? What is the effect of the study of language? What are the effects, both quantitative and qualitative, of the study of natural science, history, etc., upon ganglia and gangliation, unconscious and conscious? For it is quite evident that the modes of unconscious as well as of conscious gangliation will be influenced by every cause which induces the action of the ganglia, each peculiarly acting cause exerting its own peculiar desirable or undesirable effect.

The relations above mentioned will best be exhibited by the tabular scheme herewith presented:

NEW SCHEME OF FUNCTIONS.

Gangliation: Nervation:
- *Conscious, or Mentation:*
  - Sensation,
  - Emotion,
  - Intellection, or Ideation,
  - Voluntary Motion.
- *Unconscious:* *Subjective.* *Objective.*

ORGANIZATION.

Circulation:

Sanguification:
- Respiration, (pure air);
- Digestion, (proper food, water);
- Elimination;
- Modification.

Common Properties attendant upon all functions, Subjective and Objective (often themselves called functions):

Nutrition; Calorification;

Absorption, { Assimilation, / Secretion, } Excretion.

Of these functions, the *sensory* and the *voluntary motory* are evidently *dual.* No man has any difficulty in understanding that the functions of hearing, of sight, of handling, of walking, etc., namely, those of sensation and voluntary motion, are dual. Why should we have any more difficulty in appreciating that his intellectory and emotory functions or gangliations are also dual, as they really are. If he wishes to close an eye or to move a hand, the act is instantly done. By habit he can learn to turn out or to turn in each eye at the same time; to turn one eye up and the other down. Can it be more difficult to learn to use one set of ganglia or the other, to rest one set of ganglia or the other? The latter of these acts is done in the same way as the former, by *desiring* to do it, and by practicing to desire to do it.

This at once suggests that educators should consider the grand effects of so fully training the different sets of mentatory ganglia that either may be used or rested at option, and thus each student becomes double-powered with very little expenditure for physical support more than will be needed when one set only of ganglia is trained and developed.

I will conclude by asking your considerate attention to the utility, to the scientific fruit of the use of the terms *gangliation*, *nervation* and *mentation*, as defined and applied.

It will not be egotism in me to say that these terms open a field of the most intense interest and immense importance to which your attention could be called, and that they will be the means of advancing certain branches of science with a greater stride than has ever before marked any epoch in them. In our present knowledge, names for those functions were exactly what was wanted to the desirable object of rapid development.

The consideration thus briefly of the subject has required your most concentrated attention, for which I thank you. As coming from this learned body of advanced knowers and thinkers, whom, from long acquaintance, I have learned to esteem most highly, as one of those most worthy of respect upon this continent, I receive it as the most flattering attention that could be bestowed upon this new presentation of a scientific subject.

COLLEGE JOURNALISM.

By Principal Oliver E. Branch, A. B.,
of the Forestville Free Academy.

The list of the professions is gradually increasing. A half century ago, scarcely more than three, to which the title "honorable" was appropriately applied, offered a choice to ambitious talent. To-day, at least three more have been added to the list, namely: engineering, teaching and journalism. The ability to throw a bridge across a river, tunnel or mountain, or lay a cable, is that of no bungling contriver. He who aspires to the eminence of an educator must bring to his work a culture and an education which would adorn the pulpit or the bar; and he who enters the field of journalism finds room for the exercise of the highest and best intellectual attainments. As in the first three of the above-named professions there are different departments, so in journalism there are various types and schools. Of one known as "college journalism" it is for us briefly to speak, with reference to its growth, character and influence, and especially as to its value as an educator.

The first college journal published in this country appeared at Yale, in 1848. If we are correctly informed, it was at first an experiment, but an experiment so successful that it at once became as permanent a feature of the college as is its boating crew. Other colleges since then have gradually established periodicals, until now hardly one of any standing or importance is without its journal, appearing either weekly, semi-monthly or monthly. The weekly and semi-monthly publications are usually devoted more particularly to the current college news, while the monthlies are more strictly literary in their character. The tone of the monthly publications is almost invariably high. The bulk of the matter is contributions from the students and alumni, and consists of papers upon subjects of general educational interest, critical, literary, scientific and miscellaneous. To the editors of the college magazine belongs the work of selecting for publication certain ones of the articles contributed, and of editing the pages devoted to local news, exchanges and matters of general interest in colleges.

A college journal is a good index of the institution whose interests it represents. Through its columns one may catch a glimpse of the inner life, the character and temper of the college. The air that pervades the college pervades also the college journal. One would know almost instinctively, without looking at its title, that the Harvard *Advocate*, so critical and lofty, is published somewhere near Boston. The Hamilton *Monthly* bears the stamp of the polish which has made the college so pre-eminent in oratory and literary excellence. Who would fail to recognize in the Yale *Lit.* the dashing spirit of Yale college? Who would not see in the *Vidette* and *Brunonian* the quiet dignity of Williams, and the staid good sense of Brown? A college journal is, in some respects, singular and unique. Through it there breathes somewhat of that spirit, which is as indefinable as it is powerful, as subtle as it is charming, which no one can fully appreciate who has not felt its power, and which is as evasive to description as the color of a sunset or the aroma of a rose. It is that spirit which lights up the eye of the gray-headed man when he speaks of alma mater; which draws the under-graduate with so resistless power from the pleasures of vacation back to the hard work of the curriculum; which inspires college songs, prompts college sports and pastimes, marks college boys, characterizes college-bred men, distinguishes a college from a boarding-school or an unwieldy university, and makes it what it is, like no other place on earth. Bound to no political platform, creed or set of principles, free from the shackles which render popular journalism in so many cases so subservient, obeisant and shuffling, college journalism is characterized by a bold, vigorous, outspoken, manly utterance, an independence and a hearty enthusiasm which in the profession is so rare, yet so desirable. No act of baseness, cowardice or meanness, which in all colleges will at some time occur, escapes the condemning voice and unsparing rebuke of the college journal. Henry Ward Beecher spoke truly when he said that nothing could possibly tend more to elevate the standard of morality in college than a first-rate college journal. How often it has come within the experience of every college professor, that a few candid words from the college paper has done more to root out an evil or quell a revolt, than all the protests, warnings and threats of the faculty for years together had done. "In matters of foolish and disorderly conduct," says the *Christian Union*, "no persons in authority can talk quite so effectively to offending students as their fellow-students can." The reprehensible custom of "hazing" has been made odious in the eyes of students, more by the position taken within the last ten years by

college journals in the matter, than public sentiment expressed for a century had made it. And if the evil is ever wholly eradicated, it will not be by the denunciatory and condemning voice of the public and of the popular press, but by the dispassionate and well-tempered protests of college journals. The reason is plain. The spirit of a college is constantly changing. This fact is recognized by every one who has revisited after a time his alma mater. What the prevailing sentiment of a college is cannot be assumed by any one upon the strength of his past experience. It can be known and appreciated and taken advantage of by him only, who is its present observer. Hence it is a subject of litt.e wonder that the well-meaning but ill-timed attempts of men who have long since been graduated to correct abuses in college, have so uniformly and signally failed. Not at all remarkable is it that the decline of these abuses has been contemporary with the rise of college journalism, if not its direct result. College editors feel that they occupy a position where their candor and good sense will be tested. They are therefore compelled, if unwilling, to assume positions consonant with reason. Their influence, therefore, is felt as a powerful auxiliary by those whose task it is to enforce discipline.

But aside from the influence of college journalism in the field above noticed, may be mentioned its value as an educator. Any thing that prompts action, stimulates a noble ambition, inspires enthusiasm or awakens thought, is an educator. It is a sad mistake to consider that only an educating power which has to do with dry facts and the wearisome processes of analysis and synthesis. The solving of a problem, the demonstrating of a theorem, the evolving of an equation, the stating of a proposition, educate. So does the presence of a rare picture, the murmur of a stream, the trill of a song, the bursting of a flower. So, too, a college journal conducted upon a standard at once enthusiastic and dignified, operates as an educator, and does not fail to infuse its spirit throughout the college. It moulds sentiment, shapes opinion, directs and awakens thought. The under-graduate, who sees issuing from the college with which he is connected, a periodical which reflects a standard of thought and action which is recognized as superior, feels that it becomes him as a member of the college, if he has it not already, to make that standard his own, and if possible to elevate it. Let there be at the head of a college journal a corps of editors whose ideas of culture, education and manners are of the best order, and the most lawless, reckless student can no more pursue his course unchecked than the

government of Napoleon III could endure the steady, penetrating light of Rochefort's "*Lanterne.*" The influence of the newspaper upon the masses has ever been admitted and valued, yet the hold which it has upon the popular mind is no more direct or powerful than that which the college paper has upon its readers. Both stand upon like ground. The principle which operates in the one runs through the other.

But upon those to whom is intrusted the management of the college journal its power as an educator is even more valuable and powerful. They feel that their work has in it something of reality; that it is not a sham or a burlesque. College students, as a class, especially those of the upper classes, live very much in dreams and fancy. There is that about a college which gradually, though imperceptibly, leads one into such a condition of mind. It is a place of so strange a history, so peculiar associations, such traditions, such memories, invested with so much that is romantic and poetical, that it is scarcely to be wondered at that it produces a state of mental activity little resembling that which a life in the hurrying, noisy world always creates. Even the work of the class-room, by its sameness and repetition, comes to lose in a great measure the impression of positive reality, and the practical use of it is assigned to some far off time. As a consequence, the student little by little loses his feeling of contact and association with the world, with which he struggles only in an imagination which makes radiant while it forecastes the future. Now, he sees himself at the bar, a master of the principles and subtleties of the law, assured of success by the power of his eloquence and his understanding. Now, he is eminent in the pulpit, idolized by his people, a valiant soldier in the grandest battle of the world. Is he a physician? He is surely famous for his skill. A journalist? If so, a leader in his profession. A tradesman, an artist, a statesman? Always and ever he is successful and renowned. What, then, will more effectually break the spell of such dreams than a college paper which reaches out into the world, which has a definite object, and which brings all who are connected with it in contact with men. They find themselves engaged in no child's play or school-boy's pastime. They find they have a work to do, a reputation to make and sustain for themselves and the college. They are brought into rivalry with students occupying a similar position, and subjected to criticism; observant, if not just and accurate. They are the exponent of the college, its voice, a type of its spirit, and are brought to assume a position in the educational world. Their

fellow-students consider them in the light of representatives. They look upon the college journal as their organ, as a political paper is the organ of a party. Every student is thus brought to feel that he has an interest in the character which the college sustains, to which he adds something by his work and action. What is the great secret of the enthusiasm which characterizes the annual college regatta? What incentive leads so many young men to undergo the long and tedious training necessary to a place in a college boat crew? The consideration of health, bodily activity and athletic development, hardly enters into the problem. It is rather the idea of college reputation. Somewhat such a spirit is secured by the publication of a college journal. Thence arises its value as an educating element.

It is not, perhaps, for us to say how a college journal should be managed. Every college in which a periodical is established has its peculiar way of choosing editors and conducting the publication. Generally, the editorial corps is chosen from the senior class. In some colleges, each class is represented by one or more editors. We will venture to suggest, however, that when, as is sometimes the case, the business of managing the publication becomes a matter of politics, manœuver and wire-drawing, where no regard is paid to the competency or incompetency of the editors; when they secure their positions very much as some congressmen secure their election, then the power and influence of the college journal is debased and weakened. To young men wishing to make journalism a profession, the work of editing a college paper may be made an invaluable school. Two students from every freshman class who develop a talent and an aptitude for the work, and who are to make journalism a life pursuit, might be placed upon the editorial staff of a college journal. Let them be assigned some specific duty each year of their course which will finally carry them through the whole routine of editorial work. Let them be under the direction and criticism of the professor of rhetoric, who shall make it a part of his duty to advise them and give them instruction; and those students would have acquired a familiarity and experience with journalism of inestimable value when applied in active use. In this way, too, the tone and character of college publications would be improved. What now is most lacking in them is dignity. There is in them too great a tendency to pampering to a taste for shallow wit. They have too many petty wars of words: not enough sober, manly work.

College journalism is yet in its infancy. It is a new force which

indicates an advance in educational work which can be made of much or of little use. Properly directed, it can be made a powerful means of educating, and a strong auxiliary to those efforts which are being put forth to establish a school of journalism, lofty, scholarly and independent, which is above and beyond the corruption of political influence, and which is carried on with a conscientious endeavor to enlighten and benefit the masses. Viewed simply as an educator in college, it is of the highest value, and should receive the generous aid and support of every friend of liberal education.

SCHOOL SUPERVISION.

By Superintendent Levi S. Packard, A. M.,
of Saratoga Springs.

Mr. Chancellor and Members of the Convocation — Had one of us stood, as the skilled geologist may in theory now stand, watching from some prominent post of observation, one of those mighty and wonderful transitions which have written themselves so indelibly on the face of our planet, I am sure that the feeling of awe at the operation of the great forces and the movements of the stupendous changes going on around us would have been strangely mixed with the questions: What is to be the result of all this? and what is to be the product of these strange evolutions? And if so standing and so viewing, excluding for the time our knowledge of a God, one of us were asked to point out, name, describe and discuss the limits, prerogatives and duties of the supervising and directing power, would not our mind have sunk in utter weakness at the demand? Would we not, in looking upon this apparent chaos, be ready to exclaim: "So we confess ourselves to be the slaves of chance, and flies of every wind that blows?"

So, my friends, from a similar stand-point, with similar surroundings, and with similar results, are those of us who are called to occupy positions of responsible and important labor in the educational work of this State — called to survey and examine the chaotic and wholly unsatisfactory condition of its educational system. Whatever jealousies between different parts of our system may have existed or now exist; whatever attempts to build up one kind of work at the expense of pulling down another may have been made or may be made; whatever struggles for personal gain or personal fame may have been made or are now being made; all are subordinate to and grow out of the greater, the more weighty, the *real* question, viz.: Who or what shall be the final supervising head and power of the vast work of educating the great Empire State. And until that issue is squarely made and finally settled, we must expect from the very nature of the forces at work within us, and, I might add, from the very nature of human nature, that these jealousies, hostilities and struggles will continue; and, continuing, they will be, as they have been, greatly injurious to the work which, as educators, we are called to perform.

It is not my duty alone to provide, or the province of this paper, perhaps, certainly not now, to propose a remedy for the present existing system of inharmonious educational work. I simply remark here, that I believe the plan presented to our last legislature, partially carried and finally killed in this chamber, to be both just and good. I wish it had become a law. I furthermore believe that until that law or one which shall embody the same is placed upon our statute books, our great State will continue to receive but inferior returns for a heavy investment in an educational form — by courtesy called system — disjointed, and in almost no sense subject to and directed by a judicious and well-adjusted plan of school supervision.

School Supervision.

The term, as I understand it, is but the name of a vast and growing field of the most important labor;— labor which runs, or should run, like a massive chain of gold, from the minutest efforts of the humblest teacher in the smallest school, not over and above, but *through*, common schools, academies, normal schools and colleges, on and up to the highest, last and central supervising power of the State. Let us examine the functions and duties of the various school officers of the State. First, do district trustees or boards of education exercise the functions or perform the duties of school supervision? No; those bodies by virtue of the law creating them are legislative, and generally that only. Do school commissioners exercise the functions or perform the duties of school supervision? No! fairly, no! Why? First. The office is the smallest office in the gift of the public at our annual fall elections. Standing as it does at the last end of the gross political ticket of either party, it too often begs for a candidate, and elects him because no one else wanted the office. I can no more aptly or justly describe this feature of the office than to use the words of one who had filled the office, when he styled it "the small coin of political exchange." Such an office, with some noble exceptions, does not persuade into its service men fitted or willing to perform the duties of school supervision.

Second. Very few men accept the office as a substitute for other business. The majority of school commissioners accept the office in addition to other business, whose claims at once disqualify them, however well fitted or willing, for a faithful discharge of its duties.

Third. It is simply impossible for the best man in the State to hold the office of school commissioner as now extended, limited and paid, and in any perceptible degree perform the work of school supervision. I here quote from an article found in the *Educational Journal* of May, and written by an ex-school commissioner. He says:

"But the most faithful and zealous of these officers can do scarcely nothing in their capacity as superintendents. A visit of an hour or two at a school, with a full knowledge of the teacher and pupils, that during the remainder of the term the face of the commissioner will not again be seen in their neighborhood, and a knowledge of the commissioner that when next he calls another teacher will be in the school, and that in reality it will be a different school, absolutely prevents any beneficial effects from the visit when made." * * * "Usually he calls, talks a few moments to the scholars, and drives on to the next school. In short, the whole thing, at best, is nothing less than a farce." These words from one who knows the truth of what he affirms, but confirm my own assertion, viz.: It is simply impossible for the best man in the State to hold the office of school commissioner as now extended, limited and paid, and in any perceptible degree perform the work of school supervision.

It is true that the commissioner is clothed with the exercise of large powers in the granting and annulling of certificates. But the knowledge that such power may be exercised almost absolutely and unquestioned for the next three years, in my opinion affords the very temptation to neglect duty, on which many commissioners sit down to rest during their whole official term.

To sum up, does the work performed by the school commissioners of this State for and in the common schools of the State, merit the name of school supervision?

There can be but one answer to this question, and in the giving of that *no!* it seems to me the best if not all the commissioners will join.

Does the State Superintendent of Public Instruction exercise school supervision? This question resolves itself into several others, viz.: Is it possible for one man, or two men, or six men, to visit 25,000 schools in one year, or in one official term? Or has the State Superintendent the power or the means of so systematizing and utilizing the efforts of the school commissioners as to provide a fair substitute for personal inspection and personal visitation?

To these questions there can be but one answer, and that a negative. Similar questions may be put in regard to the Board of Regents, and with the same reply. How many members of this Convocation have ever seen the face of a regent or secretary within the circle of your home work? Or with how large a portion of that board have you a personal acquaintance?

The question may now very properly arise, have we in this State any instances of the exercise of what may fairly be termed school

supervision? Before proceeding to answer that question, permit me to give my definition of school supervision by naming its necessary elements, premising that where we can find those elements in exercise and directed to a system of schools, there we shall find supervision.

I name the elements in the order of antecedence, and in the reverse order of their importance, the most important being named last.

Come with me to some humble rural school-house. Examine and name the functions, which even the youthful and inexperienced teacher is called to exercise; and the duties which she is called to perform in addition to that of instruction. First, legislative; second, judicative; third, executive; fourth, inquisitive; fifth, inspective.

The teacher is legislative — in that she must make law or rule for the internal regulation, restraint and discipline of her school.

She is judicative — in that she must judge when the law is kept and when broken; and, also, in that she must pronounce sentence of the law when broken; executive — in that she must enforce the law and execute its sentence in the infliction of punishment; inquisitive — in that she must inquire into the attainments, and determine the fitness and rank of each scholar in the school; inspective — in that she must exercise that general, continued and intimate personal oversight of the whole organization of school, which makes all the foregoing elements of the teacher's work a success, and without which there can be no knowledge of the wants of the school; hence, no ability to legislate well; no conception of the merits or bearings of any mooted question; hence, no means of judging well; no discretion in execution; no fitness for inquisition. The results of a kind, firm and continued personal inspection of school work, are not likely to be either too highly estimated or too highly commended.

It is no longer a doubtful experiment, it has already become a certain success. In many places in our State, it is no longer regarded as a good thing to be desired; but it is already and gladly admitted and held fast as a good thing in possession. I quote again from the article of the ex-school commissioner, to which I have above referred. He says: "The people suppose that because they have school commissioners, they have the same advantages in the country that are possessed by villages and cities, in the way of supervision. And what is the result? For lack of attention our country schools are growing poorer year by year. It is true that in our villages and cities, boards of education have given us good schools; and when we speak of the advancement that has been made in educational matters in our State, we must have reference entirely to our village and city schools."

The above thoughts are forcible and pertinent to the subject and time. I hope they will prove to be good seed, destined, under the fostering influences of this summer's discussions, to produce a rich harvest for good use in these very halls.

The elements of school supervision, which we have named, need only to be extended so as to include in their exercise and operation, scholars, teachers and all school officers in one uniform, compact and well-adjusted system, in order to give to our State, school supervision in its just and broadest sense. Let us apply the test, and passing the various school officers of this State by the side of the standard elements named, see for ourselves what elements of school supervision they each possess, and what they each lack.

District trustees are in a slight degree legislative, judicative and executive. They are not inquisitive, having no power to inquire into and determine the fitness of the teacher; and practically they are not inspective.

Boards of education are legislative almost wholly. In cases of appeal they become judicative; and, in some cities, by special enactment, they are inquisitive. In the main, however, their work is legislative; and they usually leave the exercise of the other four functions of supervision to their chosen officer and such assistants as the size of the city may demand.

School commissioners are not legislative. They are slightly judicative and executive; largely inquisitive, and so slightly inspective as not to merit the name.

The State Superintendent of Public Instruction is somewhat legislative, largely judicative, executive and inquisitive, but inspective none.

The Board of Regents is in a good degree legislative, judicative and executive; inquisitive and inspective, none.

Principals of academies and presidents of normal schools, may be said to exercise all the functions of school supervision; but as their work is limited to one school, they do not fairly fall within this discussion. Two questions now very properly present themselves for our consideration, viz.: First, What would theoretically prove the best arrangement of the working force of school officers, in order to secure full supervision? Second, Have we any instances of the same now in operation in our State?

To the first question, my answer would be, a legislative body of men, with the proper executive officers; the two so united and so legally endowed, as to possess all the elements and to exercise all the functions of supervision.

To the second question, my answer would be yes, viz., in those

cities and villages where a board of education and its superintendent are so united and legally endowed with all the elements, and a right to exercise all the functions of supervisory work. Unfortunately, those boards organized under the general law of the State, for organizing union schools, and some boards organized by special enactment, are not legally endowed with the fourth element named; the second in importance, viz., inquisition into the abilities of their teachers; I speak in a legal sense; but are compelled to go to some power or authority outside of themselves, in order to obtain for themselves and for the schools under their care, legally qualified teachers. This is wrong, an absurdity on its face; and operates in many ways to the hindrance of the cause of education.

Will the dry goods merchant hire a clerk and then send him to his neighbor, the grocer, for him to determine the fitness of the young man for the position? Will the cotton manufacturer engage a man to work in his mill, and then send him to the button maker for him to determine his qualities as an operator? Will the New York Central & Hudson River railroad go to the Albany and Troy horse-railroad, and ask it to sit in inquisition upon the fitness of its conductors and engineers? Did our own legislature when it selected last winter a man for the position of Superintendent of Public Instruction, go over into Rhode Island to inquire into the fitness of the candidate? With equal propriety and with a similar absurdity, does a body of nine or more intelligent men, citizens of a strong and stirring city, or village, send the teachers it may wish to employ, to any power outside of itself, to sit in inquisition upon their merits.

Right here, I deem it proper to briefly remark upon the present position of the Board of Regents on this point. It ought to be, but it is not, a legal licensing power. I suppose there are many in this room now, men who have done a life work in the cause of higher education, who are not legally qualified to teach the humblest school in the State. I suppose there are many of you who cannot, with the change which is going on, pass with your academy to the posisition of head of a union school, and become there a legally qualified teacher without first asking some school commissioner for a license. Again, the Board of Regents gives to you a commission to instruct common school teachers, but gives your class no standard examination, because it has no power to grant to its members a license to do the work for which, through your labor the board has fitted them. I claim that this, as now stated, is not only an absurdity, but an injustice.

What are years of preparation and years of experience in the service of the Board of Regents worth, if they are not the passport to position in any school of equal, certainly inferior grade? Why is it that you are asked to fit young gentlemen and young ladies for the work of common school teaching, and are then denied the privilege of protecting them with a license to teach? Is it because you do not know the wants of the common schools? Or is it because you, the manufacturers, are not competent to judge of the quality of the article you have produced? I leave the answers to these questions to you, and now turn to the history of those boards of education with their superintendents, which have come into existence during the last fifteen years. It is full of interest and instruction. It shows to us by their success, not only the wants of many other places, but of the State at large; it at the same time shows to us the means of meeting these wants and supplying all of our public schools with proper supervision.

The fact that the schools under the care of such boards have gone fast and far beyond those not subject to the same influences, in the increased attendance, more perfect organization, longer continuance, better teachers; and, in short, in general efficiency, stands before us in bold relief. It forces us to the conclusion that our present, so-called system of supervision of the schools of the State, does not meet the wants of the school; and is not doing for them all that under a different system may be done.

How strange, Mr. Chancellor, with the example of civil and political life and system before us, that our legislators make so poor work with educational life and system. How strange, that with the example of town, county and State legislative bodies, with their executive officers in full sight and knowledge, the members of this same State legislative body, meeting here annually, should annually so flounder, hesitate, back and fill, when that on which the State's life depends, viz., *education*, comes up for their consideration.

We have only to consider the example above referred to, in order to find a simple plan for unifying and compacting the supervisory work and duties of what may be fairly termed an educational system. And let us plant here two suggestions, viz.: First, we have patched enough. The structure is badly put together, of many shapes and very leaky. Let us pull down and build anew. Second, let us build not only in accordance with common sense, but in accordance with a knowledge which may be obtained from the erection of other structures. I will begin with towns. We want in

every town a legislative body of a suitable number of men, who shall elect a superintendent of the schools of the town. This board and its superintendent should be legally endowed with all the elements, and the right to exercise all the functions of school supervision.

From the town, I pass directly to the State, the highest authority, viz., a legislative body, call it Board of Regents, or any suitable name, for the whole State. And somewhere between these two points thus laid down, should be placed every educational institution of the State, which receives toward its support a dollar of the public money now disbursed by the various officers and boards of the State. Normal schools, academies and common schools should all stand alike here. But foundation and roof are not enough to make a building; nor brain and extremity enough to make a human body. No more are a State head and local officers, without a proper medium of communication, and a proper filling up of mutual support, sufficient to give to our schools a proper supervisory system. Let us then proceed to erect the walls of the building, and establish the proper means of communication between head and extremities. The State board should appoint or elect three superintendents. One of normal schools, one of academies, and one of common schools. These superintendents should be supported at State expense, by a fair salary and a just allowance for all expenses while traveling on public business.

The superintendent of the normal schools should, in the broadest and best sense of the term, be a normal school man. He should be located in the geographical centre of the normal schools of the State. He will thus be enabled to give to them, in a large degree, the fifth and most important element in supervision, viz., personal inspection.

The superintendent of the academies should be an academy man. He should be located in the geographical centre of the State. He should appoint four deputies, who should be located in the centre of the various sections of the State assigned to their care. He should at stated times demand the personal presence of these deputies at the central office, for purposes of advice and conference. He should require such monthly reports from them as would indicate the exact condition of each academy in each section. These personal meetings and reports will show to the superintendent that section or that academy which may need his personal attention and inspection.

The deputies should have power to summon each to his own office at stated times, the principal, or president, or both, of every academy

in his section. He should require proper monthly reports. From these personal meetings and reports, he will be able to devise and enforce, by personal attention, such plans for harmony of effort, correctness of standard, and such accuracy in statistics among the academies of his section, as the advancement of the cause of higher education and a just distribution of the public money demand. By the means thus described, the superintendent, though not able to inspect in person all the academies of the State, may secure an equivalent, and become so acquainted with them all as to make his influence felt and acknowledged in every institution in the State.

The superintendent of common schools should be located geographically as those before named. He should appoint four deputies, who should be located each near the center of his own section. The relations between these deputies and their chief, should be the same as those named between the deputies and chief of academies. But owing to the large number of common schools of the State, these deputies should have the power of appointing an assistant deputy in each county in his section. He should, also, have the power of establishing the same relations between his assistants and himself, as exist between himself and his chief. These assistant deputies should have the power of establishing the same relation between the town superintendents and themselves, viz., personal meetings and monthly reports. Let us recapitulate, and in the opposite direction. The town superintendents, supervising in connection with their boards, the schools of the towns, and reporting in person to the assistant deputies; they to the deputies, and they to the chief. All giving as much personal inspection as possible. All practical educators, and all required, unless it be some town superintendents, to abandon every other business, calling, or occupation, on assuming the duties of the office to which they are appointed.

Could such a system as thus described become the supervisory system of our State, among the immediate results would be, two great, yes, sufficient advantages, viz.: A unified system; and one unified on the basis of an already demonstrated good, of a systematic school supervision.

Among the growing advantages may be named better school-houses, better furniture and better school material. A larger attendance of scholars, and more days of schooling in each year. Better qualified, better paid and more permanent teachers. A general systematic grading of the schools throughout the State, and a more general public interest in their welfare. Without considering here the objections which may be urged against the proposed plan, I

pass directly to a brief consideration of the question: Is it possible to obtain such legislation as will make the theory a fact? I believe it is *possible.* Is it *likely* that such legislation will be obtained?

Teachers, educators, educated and educating men of the State, the answer to that question lies wholly with you. Indeed, the question is more properly: Will you obtain such legislation? The numerous bills relative to educational work, which have either been pushed through to success, or have been killed in this hall, forcibly remind us of what a few determined spirits may accomplish. Expand and multiply this by the united efforts of all interested in this work, and any reasonable demand, made in the name of, and for the cause of, education, will be conceded. I believe that our legislators are weary of having this educational patch-work annually spread before them. I believe they would prefer to stop mending and to make new. At all events, let us frame a bill and present it to them, with both sense and system in it; urge the same by the united influence of the educators of the State, and trust Providence for the result. It is true, that when the schoolmaster comes up State Street hill, he, as a rule, brings more of modesty than of money; more ability to control a school-house than to control a State House; more tact at managing the future than the present man. Yet, for all that, he is respected. He is a power in the land; a power which, if united and directed to a proper aim, will not fail of success. Teachers of the State of New York, bound to New England by the everlasting mountains lying between; by the sweet rivers flowing from hence, carrying wealth to her mill-wheels and waters to her ocean; by those threads of silver, which bring the tears of her hills to our own Hudson; by railroads, those iron bands which man has laid upon the laughing face of Nature, to sober her into restfulness, how long will you be content to look over there, to see her educational system enjoying the full life of a youthful and rosy maturity; and then turn to behold ours in its aged childhood?

THE RELATIONS OF THE COLLEGES AND THE SECONDARY SCHOOLS.

By Cecil F. P. Bancroft, Ph. D.,
Principal of Phillips Academy, Andover, Mass.

There was a time in the history of education in this country, and that not long ago, when the phrases "fitting for college," "going to college," and "graduating from college," conveyed to every mind a definite and substantially the same meaning. That day is past and the word "college" is fast becoming, even in the older States, the most uncertain of educational designations. As regards education, the present is a period of unrest, movement, reorganization, not to say revolution. Experiment is employed largely in every grade of our schools. The relations of the State and of the churches to our school systems, the proper studies and their order, "the scope of the education demanded by our age and country," and, in general, questions pertaining to the theory of American education, are earnestly debated, and the new views as far and as fast as possible are put to the trial. We have seen our oldest college during the last few years sweeping through rapid changes, "pausing now for a year of consolidation,"* but apparently preparing for we know not what further changes. Equally violent modifications of prevailing methods have been inaugurated elsewhere in upper and primary schools.

Two somewhat opposite tendencies are operating powerfully upon our colleges; one of foreign origin, which strives to elevate our college course two whole years, forcing back the work of these two years upon the preparatory schools; the other the result of the so-called practical view of education, which, under the patronage of genuine but short-sighted benevolence, local ambition, hasty legislation, and greed for numbers and endowments, lowers the college standard by filching from the academy a year or more of its best work, thereby debauching all the rest. Both tendencies must be kept in view, as no geographical boundary marks off the one from the other.

The secondary schools are likewise changing, though not so much nor so rapidly as the higher. They follow necessarily the lead of

* President Eliot, at the Commencement Dinner, June 25, 1874.

the colleges which they supply. The work of secondary education is, to a considerable extent, being committed to new agencies. Our cities and larger towns sustain local high schools which fit boys for college. Many of the old academies finding their occupation gone, have become inconsiderable or extinct. The older and stronger draw their pupils more and more from long distances.* In some of the larger cities select private schools are fitting boys for college in increasing numbers and respectably well. The old method of private instruction, once employed only from necessity, has come again alarmingly into vogue, and private tutors have become professional even under the shadow of our best schools.

From this brief rehearsal it will be seen that the subject of the present paper (an attractive one, as the records of the convocation show), derives additional importance from the changes now in progress or proposed. It is not easy to say what the relation of college to academy now is. The ratio of two independent, indeterminate variables baffles logic and mathematics alike. The term "secondary school" has hardly got a foot-hold among us; the term "college" is losing all it ever had.

Contemplating the awakened interest in the relation of preparatory to superior instruction, the present paper, forbidden a full discussion, aims only to emphasize certain points of dangerous innovation and certain inviting points of reform.

The attempt to obliterate the American college and pattern our educational system after that of Germany, deserves careful consideration. During the present century we have recognized four grades of schools, viz., the elementary school, the academy or high school, the college, the professional school. In the German system there are three, viz., the elementary school, the gymnasium, the university. Take from our colleges the freshman and sophomore years, and give them to the academy, gather about the junior and senior years our professional schools of law, medicine, theology, agriculture, mining, etc., and style the aggregation a university, and we have a rough approximation to the German system. More exactly, give a boy a good elementary training till he is nine or ten; keep him nine years in the secondary school at languages, history, mathematics, music, religion, natural sciences; at eighteen or nineteen send him to a university for three or four years' study, partly liberal, partly professional, and you have the average educated German. Shall we adopt a similar method?

* Nearly fifty per cent of the pupils of Phillips Academy are from beyond New England.

Much as we admire the organization, methods and results of the German schools, we must not be led into a futile endeavor to import them bodily — we are to achieve success by no servile imitation of foreign methods.* It will be a sad day for us when we forget that American life imposes obligations and furnishes opportunities such as cannot exist elsewhere. For these our education must provide. The American mind, and American business and social life demand schools and systems peculiar, native, national. Imported education, even for purposes of instruction, has, with many brilliant exceptions, been a conspicuous failure. Educated foreigners come to us in no small numbers, but rarely to professional life—most rarely to professional success. Their admirable education is not the education demanded by our institutions. Our best schools, those which do not need the advertizing, are generally substituting for foreign masters in modern languages, men born and educated here who have traveled and studied abroad. Yet no candid observer can for a moment assert that American schools and American scholarship can compare favorably with the German in extent or thoroughness. German schools are models because shaped throughout in harmony with German government, German character, German history, German life. Their nice and comprehensive adaptation to the wants of the German people is their distinction and their power. The thing for us to imitate is not their machinery but their wisdom in choosing "the best means for the highest ends"— the underlying principle which animates the whole German system.

To obliterate the college would require us to raise our existing colleges to universities, or to degrade them to secondary schools, or to treat some in one way and some in the other. There are eighteen colleges in New England, that is, institutions which confer the degree of bachelor of arts upon pupils of four years' residence. But eighteen universities would be a surfeit, nine times the proportion to population found in Germany, or eight times too many, taking into view the fact that one-third the 2,900 under-graduates in New England are from beyond her borders.† Under the "voluntary system" we cannot reduce our colleges to gymnasiums — we cannot invoke the arm of the State to consolidate, restrict and suppress — we cannot even prevent the multiplication of universities and colleges. The poorest college is sometimes most persistent in

*See an excellent article by my associate, Prof. E. G. Coy, in the "Massachusetts Teacher," June, 1874; p. 222.

†See "Deutscher Universitats-Kalender," 1874; Hurst's "Life and Literature in the Fatherland;" U. S. Census for 1870.

living, as ungrafted fruit is proverbially the most hardy. The "survival of the fittest" does not rule in education. Poor schools often flourish where good ones languish. Could we persuade three-fourths of our colleges to become academies and half the remainder not to become universities, doubtless it would be a great advance from chaos toward cosmos, but what "divine persuasion" can bring it about!

It may be objected that raising the standard of admission two years does not obliterate the college. But at Harvard, where the standard has been raised at least one year,* the courses of instruction are becoming more and more university in their character. This is the tendency generally. Out of the eighteen New England colleges, only two remain colleges in the old sense, *i. e.*, with one faculty and one prescribed course of study.

The American estimate of time and expense is an important factor in this problem. The average age at Harvard on entering is already eighteen. After the four years of the general course the professional schools claim two and three years more. Can American students, as a rule, be held a year or two longer than at present, when they are already 24, 25, 26, at taking their degree in medicine, law and divinity? Can we give to our non-professional callings the culture they need and now welcome, if the educational period be much prolonged? Will not young men in increasing numbers pass from the secondary schools with their increased advantages directly to the professions and to business? We have no civil examinations as abroad to prevent. In order to preserve the college in its integrity, as the great center of *discipline* and *culture*, as opposed to a center of learning, teaching and information, the present requirement for *college* must not be increased. A German university succeeds because it receives pupils admirably fitted, but an American university of equal grade, with our present means of preparation, is absolutely impossible.†

But a single year of advance is all that has generally been attempted. Harvard has noticeably led the way in the amount and variety of increased requirement. Yale is more conservative, but at certain points requires more than her great rival. Nearly all the colleges have increased somewhat their demands upon the fitting

* "A year and a-half," Prof. Peabody before the National Teachers' Association at Detroit, August, 1874.

† Dr. McCosh's article on "Upper Schools," in the "International Review," March, 1874, opens with a happy illustration of this point.

schools.* Under these demands the fitting schools have been obliged to adopt a four years' course of study, in place of the traditional three, which has ruled since about 1840.† For obvious reasons, this is much easier for local schools than for national institutions. I think I do not overstate it when I say that the great body of the preparatory schools regard these increased requirements with a feeling of suppressed revolt. In a few cases the college dictation has been received with a spirit of servile obedience. A writer in the *Atlantic Monthly* ‡ predicts that fewer schools will prepare the great majority of students for the advanced colleges. When the preparatory schools become fitting schools for some one college they must become clannish, and lose their independent and national character. A school with a history and character of its own will not be willing to forfeit its prestige and become a mere appendage to another institution, however famous. It is a misfortune to decide for a boy at the commencement of his course to what college he must go, yet such must be the result if our schools follow the prescription of any single college. Nothing heretofore has so impaired the *personnel* of our secondary schools as the dependence of these schools upon the colleges. A teacher obliged to read with his classes a definite amount of prescribed authors, to use prescribed text-books in prescribed studies, to prepare pupils for set examinations which are oftentimes no test of acquirement or mental power, finds his freedom and manhood so repressed that he welcomes the opportunity which some college offers to conduct his classes after his own method, with a view to best meeting their wants; or he abandons entirely the profession which allows so little professional scope to individual aptitudes. But if the new order of things requires any thing, it is a higher grade of instruction in the secondary schools. These schools become more important than ever. There is in the nature of things no reason why positions in our secondary schools should not be as attractive as chairs in our colleges, and instances are not few in which professorships and presidencies have been declined or abandoned for the less conspicuous, but no less honorable, important and exacting duties of the academy. The late Alpheus Crosby, who left the chair of Greek in an excellent college, is said to have declined a similar position in an older and more famous institution with the exclamation, "what! leave my normal school?"

* New requirements after 1875 are formally announced at Harvard, Yale, Brown, Tufts, Bowdoin, and expected at Dartmouth, Amherst, etc.

† Four years at Exeter, New London, Andover, Quincy, Easthampton, etc.

‡ May, 1874; p. 638.

With the larger courses and higher studies of our secondary schools, increased scope is given to men of moral earnestness, large knowledge, apt to teach. The Prussians are here again our teachers. While one general plan of instruction is laid out for all the secondary schools of the nation, the details are left to be wrought out according to the local requirement and the peculiar genius of the instructor. The gymnasium has its own province in which it is as free from trammels as the university itself. Under this freedom great variety can exist and does exist, without prejudice to the pupil when he goes up to the university. The academies, high schools and union schools of New England and New York have a right to demand for themselves a similar regulated freedom, in the interest of the better instruction they can thereby give, and the abler instructors they can thereby secure and retain. The history of our schools shows that it is not buildings, endowments, scenery, accessibility, age, that give them excellence and power, but teaching, teachers, the personal element above all others. Dr. Taylor was able to fit his great classes for college for a third of a century without the help of fine structures, large libraries, invested funds, without a line of advertising, or a penny of denominational or State aid, by his surpassing power as a teacher, and his conscientious determination to fit boys after his best methods and independent of college requirements, confident that men well prepared (both in scholarship and character) to meet successfully the demands of college life, would win at last, as they did, the recognition of the college authorities, and give the highest practical sanction to the training they had received in the preparatory school. Thousands of his pupils revered him while he lived and made great lamentation at his death, because he had the moral power to be true to himself and to them. The colleges, if they seek the general advancement of education, must respect the scholarship and manhood of the teachers of the secondary schools.

The advanced requirement is a severe test to college and academy, to pupil and teacher. Under the increased requirement of at least an additional year, the colleges and the public must awake to the necessity of an increased endowment for the secondary schools. To do college work we must have college equipment, endowments and instructors. Public schools are independent of patronage, but private and incorporated schools must be sustained by other resources than tuition fees.* A sensitive treasury embarrasses discipline and depresses the whole tone of a school. We have seen the importance

*The tuition at Andover is sixty dollars a year, but the cost is nearly twice as much.

of retaining superior men in the secondary schools. To make the positions attractive, and the incumbents able and permanent, it is of prime importance to attach an adequate salary to the various appointments. If they are held in less esteem than college professorships, make them more attractive in other directions. Doubtless many good teachers have been underpaid, left in poor quarters, or without adequate books and illustrations, but their success is in spite of these wants, not because of them. As Dr. McCosh has shown in his admirable paper on secondary schools, to amply endow such schools as Exeter and Andover is to do more for the cause of education than to found a college or a university. Colleges are paying increasing attention to their feeding schools, and with good reason. Poor as they are themselves, it is a wise economy to divert funds, for a season, to the schools which furnish well-drilled pupils.

Even more important and yet attended by more difficulties is the abolition of the college entrance examination, and the substitution of the final examination of the secondary school. The present system is superficial, illusory and notoriously unjust. It invites cramming to the disparagement of all true education. It sanctions hasty preparation under tutors to the discredit of patient, faithful work through the needed years of discipline. It exalts information above education. The element of time in education, which has been so strictly maintained in colleges, has been entirely neglected in secondary schools.* No college asks how long a boy has studied Latin, but how many books he has read, yet no college permits a boy to do two years' work in one after he comes under her maternal care. A boy passing from one school to another higher, undergoes no magical change by which he loses the power of rapid acquisition, and gains the maturity of judgment necessary to choose wisely the subjects he will study.

Every teacher in the fitting school has observed with unavailing regret how much time and strength is lost in a nervous dread of the formidable college examination. It is a clumsy, inadequate contrivance, and ought to be greatly modified or abandoned. This proposed change is *safe*, for our colleges have long been accustomed to drop men, who, in spite of the precautions of entrance examination, prove incapable of performing the work of the college. No school on whom responsibility is placed could afford to send up, even occasionally, pupils imperfectly prepared. The plan has already been

*The German university is the one institution in the world which has for its motto: Time is NOT money. [Hart's German Universities, p. 35.]

tried in Michigan where the diploma of certain public secondary schools is accepted in lieu of the entrance examination. It is universal in Germany, where under the influence of Humboldt, Schleiermacher and others, the pernicious entrance examination of the university gave place to the final examination of the pupil by his own masters in his own gymnasium. No man is competent to teach a boy the studies requisite for admission to college who has not scholarship enough and moral courage enough to decide whether he is fitted to perform the work and receive the benefits of the college. At present the teacher shifts the responsibility upon the college. Self-respect forbids us to use our influence to help a worthy or hinder an indifferent student in securing admission to college. We are not consulted, and to offer our opinion is impertinence. Every good teacher desires to spare good and well-trained pupils the injustice and humiliation of "conditions" resulting from the weariness and confusion of that "tumultuous preparation," which the Germans specifically deprecate and avoid, and the physical exhaustion and nervous prostration or nervous excitement resulting from travel, the influence of new scenes, and particularly the magnitude of the issue of fourteen to sixteen hours of written work covering the labor of four or more years. If it be impossible to apply this method to all preparatory schools, or to all pupils in the selected schools, yet no one reform is so important, or so feasible, none would give so much dignity and character to the secondary school and its masters; none would so tend to that calm, earnest regard, both by teachers and pupil, for "the perfection of the whole man," the end of all education, giving the stamp of approval to genuine and continued work under the best instruction the country affords.*

The secondary schools must undoubtedly accept the new requirements. Lament as we may, and as we must, that the new requirements have not uniformly been made in the line of quality rather than quantity, it is to be granted that a college entrance examination may as properly, under the present system, cover the work of the elementary school, as of the secondary school, and that it is not too much to demand that candidates have some exact acquaintance with their

*Since the writing of the above has appeared President Eliot's annual report for 1873–74, which gives (p. 12) the opposite view: "It is dangerous to copy, as in this case, details of the German system of public instruction before we have adopted its main features — when every boy who graduates at a high school thereby escapes two years of service in the army of the United States (war being always imminent); when no one can enter any learned or scientific profession whatever without having graduated at a high school; when all masters of high schools are men appointed by very competent authority with great care, for life, after elaborate preparation and satisfactory probation; it will be time enough for the American colleges to admit young men on their school certificates."

own language and literature, as well as with Greek and Latin, with modern and physical geography, as well as with ancient geography and myths.* With respect to classics as compared with sciences, the main strength must be doubtless given to classics as pre-eminently disciplinary studies, even in the interest of the sciences which are most successfully pursued by men of general culture. Under the pressure of a material age we must often declare that disciplinary study is the most practical. Algebra is less used, even in business, than the dead Latin now so much decried. Little rocky Attica has played a more important part in the drama of human history than the whole western world, with its affluence of natural resources. The colleges must protect the secondary schools in maintaining the tried and approved philosophy of education.

Matthew Arnold states that as the result of his first visit of inspection to the schools of the continent, he returned advising his countrymen to "organize the secondary instruction." After a second visit he repeated his first emphatic suggestion, and added thereto, "organize the superior instruction." It is this which America, without the aid of royal commissions, is aiming to do. I believe we are not so much at cross-purposes as some years ago, that our diverse interests are coming into harmony, that the teachers of the country have never before been characterized by so much devotion, catholicity, and intelligent comprehension of our resources and our needs. Teachers can do more than any class in the community to shape that public sentiment which is more powerful than legislation, and which will bring our fragmentary, crude, conflicting systems of schools, to maturity, completeness, and harmony. They can do more than any class to raise the necessary endowments to secure the higher education to the people. They can give that dignity to their profession which shall make it attractive and congenial to the first order of minds. It is their privilege and their duty to make this period of educational reorganization one of genuine and lasting improvement.

* The West Point entrance examination is the best illustration of absolute thoroughness in a minimum of requirements.

Note.— I desire to express my obligations to Prof. Dr. Nasemann, director of the city gymnasium of Halle, for opportunity to study the working of his excellent school, and for information concerning the German system of education in general. I have freely used Matthew Arnold's "Schools and Universities on the Continent," a magazine of information and suggestion on the subject.

THE FREE ACADEMY IN A SYSTEM OF GRADED SCHOOLS.

By Principal Asa Gardiner Benedict, A. B.
of the Rome Free Academy.

No fact is more cheerfully recognized than the free common-school system of New York; no taxes are paid with a greater assurance that the money is well invested than those given in support of schools. But when the schools have been graded to secure greater efficiency, and more time allowed, a more extended course given, a fair degree of culture attempted, a penurious, deprecating howl comes from money possessed of few brains. To what purpose is this waste? why is not this money saved and given to the poor? Aye, to the poor it is given, and the rich man's son is not excluded. Although far-sighted wisdom has been establishing higher grades in the free schools since 1853, until they now number 94; although they afford instruction to a fair proportion of the academic pupils of the State, equal in character to that received in schools of the same rank elsewhere; although they are a fact deeply rooted in the necessities and affections of the people of their respective communities, they are not beyond a point at which they may cease to give a reason for the advantages they confer.

We will endeavor to state fairly some of the objections made to the free academy; suggest an answer to them; further give some positive reasons why it should be supported; and lastly, what the free academy may and should be in a community.

We hear it stated, as an objection, that the moral or legal obligation of a State or corporation ceases with the benefit conferred in the common schools.

Those interests are properly objects of the fostering care of the State whose influence is elevating and purifying. Education, culture elevates the citizen, enabling him to judge with wisdom, and to discriminate with justice. Although our free academies may not be schools of morals, they are moral schools; although they do not teach religious truth, teachers of religious truth derive much of their instruction within their walls.

Those are properly objects of the fostering care of the State whose influence is general. No one disputes the right of the State to tax to support the post-office department; no one disputes the right of the government to tax to support common schools. These are objects of public benefit, and general. The cases are not rare in which the great cities and smaller corporations have taxed themselves enormously for parks, fountains, buildings, called public improvements. No one of the tax payers questioned this proceeding, for they saw their property appreciating in value at each stroke of the work. It may be that but few of the persons whose money paid for these improvements ever enjoyed an hour of the relaxation, the comfort, the pleasure they were intended to afford; still to no one were these advantages ever denied. They do not complain, their return, their satisfaction takes another form. It exists in the consciousness that all these delights are to them *in posse*, and that the per cents are daily increasing. Those to whom *per centum* is an unheard phrase are satisfied that these enjoyments are to them constantly *in esse*.

We would now seek to show the exact parallel which exists in the case of a large part of the works called public improvements, and that part of our system of graded schools called the free academy. The one may be uncalled for in a place of little refinement, small means, few inhabitants, and a low standard of culture. It may be, indeed, inexpedient in a place where very existence is a difficult problem, to erect the sculptured marble and carved fountain, however much it might add to its beauty. The same reasons hold with equal weight against the free academy in similar circumstances. But if a community of considerable wealth, of culture, of refinement, of scholarship, seek to perpetuate these qualities, why will our financier make a vigorous remonstrance when their efforts take the form of the free academy; and ever give an approving word when their efforts find material expression in boulevards and parks.

The academy stands, offering to all its advantages free of cost. The glorious fact that within its walls lie great possibilities for every child in the town, is its greatest *raison d'être*. In this country, choice is denied to no man, in religion, in thought and speech. Of the million in New York, it is safe to assume that but a small proportion visit its magnificent park, and obtain their needed relaxation from daily toil. Nevertheless its numerous visitors attest the wisdom and bless the liberality that gave them the precious boon. Are we perfectly sure that New York does not owe its vitality to this or similar recreation?

The free academy well sustained in turn increases the value of property in the town in which it is placed. Instances are not wanting where property has decreased in value, and many worthy citizens have left a town on the decline and abandonment of its school.

But our friends still object, "we do not say that an education is not worthy the most strenuous effort, or that the blessings it confers are over-estimated, but we do say, let the parents pay for it, and if the youth without means has not snap, perseverance and judgment sufficient to secure it for himself, let him go without. We have already a sufficient number of scholars without tact, skill, energy or influence. My poor neighbor's boy has no right to ask me to give him more than a common school education."

To this we would ask, has your rich neighbor a right to ask you to vote for *public improvements* that will immediately enhance the value of his property one hundred per cent? Let him beautify the city at his own expense, if he have snap, perseverance and judgment. Have you, the man with a competence, standing midway between the poor and the rich, a better right to reach up and make the rich richer, with some advantage to yourself it is true, than to reach down and make the poor man richer, with additional safety, a higher nobility to yourself, and additional wealth in dollars and cents and good deeds. No; rather with every dollar devoted to material improvements in your city, vote another dollar or half a dollar to the free academy. But if you would take away the free academy, are you not bound to remove every vestige of park, fountain and object of beauty that makes glad the hearts of the people?

Our friends further urge that the meagre results do not indicate that deep interest which should be felt, and it does not pay; that of the hundreds and even thousands in the lower grades hardly a score complete the course in the academy.

The number is constantly increasing. But we must remember that the results and influence and culture of mind cannot be gathered, weighed, counted and measured by the standards that control our plans in handling commodities. A well-known man of science stated that the proof of a single fact by the geological survey of the State of New York has been and still is worth more to science and to the age, than the total expense of the whole enterprise. Louis Agassiz, the teacher, remarked that the report of the investigation of Col. Clark on the flow of sap, was an ample return for all that had been expended on Amherst Agricultural College. Likewise, in the case of the free academy, results flowing from the life and deeds of a single graduate, may and often do, compensate the public for all the

sacrifices they may have made to maintain the free institution. As in lives, experience, trial, effort may be concentrated, compressed into a few short years, months or hours, so a few graduates may honestly give back a full return in ability rightly nurtured, in power fully developed under the direction of the free academy.

One of the strong, positive reasons for the existence of the free academy is that it is distinctively a home institution. By local taxes its life is fostered: under local supervision its success is attained: from home patronage it takes its strength and pride. Like the press escorting the stay-at-home traveler over the face of the earth, the free academy allows the village school-boy, while still under the restraining influences of home, to test his ability and temper his enthusiasm on the problems that tax the powers of the youth in distant cities. Corporations should remember that a free academy of high character is a strong attraction and powerful reason for families with children to educate to become citizens.

The free academy is not an excrescence on the body of our system of education, not an expensive luxury that the wealthy alone can enjoy, and that of questionable character and of doubtful benefit. It has a distinct place, a strong reason for its existence. It is not aggressive, antagonistic to any interest, but it quietly produces at home what it had been accustomed to purchase abroad. The question is not whether the building be erected at all, but whether after the foundation be well laid, the materials grown and quarried in the immediate vicinity of the structure, be taken to a distant point to be trimmed, planed, polished and fitted with considerable risk and unnecessary expense in transportation, or facilities for the same be afforded at home. If not, many a fine foundation must ever wait for the superstructure, a monument to the mistaken idea of the academy requiring tuition.

As a system of education, cultivating every part of the nature, training every power, arousing every dormant energy, it may be imperfect. The perfect gun at Sedan did fearful execution; its rapid working, deadly aim and wonderful precision made it the king of death-dealing instruments. It captured an emperor, conquered territory, drove the lively Frenchman back to his gay capital and exacted tribute. In our revolution, flintlocks often flashed in the pan, but their defiant throats were resonant with ideas. The imperfectly accoutred soldier won a victory for his country, for liberty, for the race, compared to whose glory the triumph of King William is as the faintly re-echoing pistol-shot to the united thunder of batteries of artillery.

Imperfection is often the means of achieving greater results than the most perfect appliances. Pullman palace cars do not first, in gilded, tapestried receptacles, convey the treasures of the mine; but the dusky hand of a South American negro hides beneath his tattered garment the Koh-i-noors of Brazil. The universities of Oxford and Cambridge, hoary with age and overflowing with wealth, graduate men of rounded culture and wide influence; but it is reserved for the simple grammar school at Stratford to train and give the elements of education to nature's own interpreter. Our systems of education may not produce men who will write an unrivaled epic, or again mould the English language to the rhythm of Shakespeare; but they are training up a nation of men, thinkers who appreciate, admire, love, criticize, and live epics and dramas in their noble, manly way of filling a free, national life. The imperfect has ever been made to do service to its utmost capacity, and has thus done the major part of the work in securing true, free, pure national life, or overturning the tyrannical and unjust. The stammering tongue and slow of speech have often pleaded, convinced and won. So, the culture of the free academy has been in the past, and will continue in a greater degree in the future to be, the sole preparation of the business and professional man, the legislator, the jurist, the cabinet officer and the president.

The true work and curriculum of the free academy presupposes what Edward Everett called a good education, ability to read, to write, and thorough familiarity with the fundamental rules and principles of arithmetic. Its mission is two-fold; first to the pupil, second, to the community. Securing the first in many cases often accomplishes the second. Its appliances should not be made with a view to the benefit of the immature individual alone, but should meet the wants of the inquiring adult.

The conditions of the problem are, given three years and sometimes four; pupils prepared in the public schools; a course including the elementary principles of science, physical geography, natural history, geology, astronomy, natural philosophy, chemistry; the grammar and construction of one or two modern languages, with some familiarity with their representative authors; elements of mental and moral philosophy, the requirements in the ancient languages preparatory to enter college, with mathematics up to spherical trigonometry, with history and rhetoric, and practice in essay writing sufficient to enable the pupil to examine subjects, and investigate topics with the aid of all books in his reach, and to express his thoughts correctly and forcibly. The solution of this problem, the end pro-

posed is, to fit the pupil as far as test problems and theoretical cases may for the struggle in which little allowance is made for intentions, and in which success is the chief proof of ability.

For complete acquaintance with the leading facts of science, a laboratory and cabinet are indispensable. Not a small test-tube rack, dust covered, holding equal sovereignty on a contracted shelf with a few acids and broken bottles; nor a still larger collection in an inconvenient, ill-arranged place far removed from the class-room; but a large, generous collection of apparatus of attractive appearance, well adapted to its purpose of presenting and explaining phenomena without mystifying, or quenching the interest and curiosity of the learner, and testing the temper of the experimenter. A set of instruments is needed that will enable an inquirer, whether a pupil or professional man, to test the soundness of his theories; a collection that can be readily used by the professor from college to illustrate in an occasional lecture the most recent discoveries of science.

A library should not be wanting; one comprehensive in history, rich in biography, fair in criticism, complete in cyclopedias and books of reference; in fact, a city library in a suitable central location, available to every citizen, yet especially adapted to the wants, and accessible at all times to the students of a free academy.

Another topic forcing itself on the attention of school managers and school boards, is the introduction of the study of drawing. It is becoming a means of expression not merely of things beautiful, but a mode of conveying to others our ideas of many objects. The position claimed for it is not that of a science, not merely of an accomplishment, but a kind of language, a means by which a livelihood is gained. The calico printers of the United States are beginning to occupy advanced ground in their business, because of new and unique designs furnished by even children instructed only in the free school. It is not beyond the hope of the friends of the free academy that a nation and a commonwealth that have erected so noble a system of education, which exerts so wide and beneficial an influence, can yet find place in its course for the study of art. But art in its highest forms ought not to be absent from the walls of our free academy. Through the liberality of the boards of education (supplemented, perhaps, by private contribution), it is possible to place on the walls objects of beauty that shall enrich the life, cultivate the love of the beautiful, guide the forming taste to the appreciation of the work of the best masters. Having reached this elevated point, the home-bred youth catches a glimpse of a world of imagination and beauty that shall stamp all his conceptions with the

peculiar characteristics of his models. Thus there may be placed in the keeping of schools of each town works of art accessible to all, the pride of the donor and the highly appreciated boon of the pupils. In short, the germ of an art gallery, which it may indeed become for a limited period each year, by special temporary contributions.

In the language of one of our foremost educators: "A good picture is a teacher that makes no mistakes, and is never weary of giving line upon line, and precept upon precept. Some of the deepest truths that concern our culture and welfare, have no better way of speaking than through the golden silence of a beautiful picture."

Says Walter Smith, head master of drawing in Massachusetts, in an address on drawing in public schools, using the words of another: "'We may abandon the hope, or, if you like the words better, we may disdain the temptation of the pomp and grace of Italy in her youth. For us there can be no more the throne of marble, for us no more the vault of gold; but for us there is a loftier privilege of bringing the power and charm of art within the reach of the humble and poor, and as the magnificence of past ages failed by its narrowness, ours may prevail by its universality and its loveliness.'"

He resumes: "The art of the future will recognize no feasts of the gods nor martyrdoms of the saints. But there is in us a yearning after the beautiful in thought and language and color, and the country in which love of art is most general and its practice in the highest branches most thorough, shall now, as in the past, be the representative to all future ages of the civilization of mankind."

The sphere and scope of the free academy is wider than has been supposed. Its library should be the nucleus of a city library, its cabinet the beginning of a museum, the pride and care of the town. The free academy should be the center, germ, heart, mainspring of a system of appliances, each having for its object the education not only of the individuals of school age, but more or less directly of the masses of the uncultured, of *all* in whose welfare the State is interested. The free academy, the cap-stone for the present of our system of graded schools, should be a source of an influence that shall counteract the insane money-getting idea, which distorts the moral vision, and leads to extravagance and crime.

THE ACADEMY IN ITS RELATION TO THE WORK OF COMMON SCHOOLS.

By Principal John W. O'Brien, A. B.,
Griffith Institute, Springville.

No casual observer, giving the subject a moment's consideration, can fail to be struck with the inter-dependence of the common schools and the academies of our state. Only teachers, however, have learned how intimate are those relations, and how powerful is the influence which these two departments of education exert upon each other. Enter any academy and look over the record. The number of pupils who have taught, or are preparing directly for teaching in the common schools, would surprise any one who had never given special attention to the subject. Go, now, to the common schools. Inquire how many of the boys and girls gathered there expect to enter some neighboring academy, and it will be very strange if, in these days of general education, you do not find a large proportion who look forward to that with an expectation as confident as of going to school to-morrow. Ask the teacher where the preparation for his work was obtained, and he names an academy as the place where the desire to teach was aroused, the impulse given, and the training received which has fitted him for his present position of responsibility and real power in the district school.

Even our larger institutions depend considerably upon local patronage, while the smaller ones look for their support almost entirely to their own immediate vicinities. It is needless, then, to say that a low standard of scholarship in either an academy or the surrounding common schools will have a mutual action, and that not indirect or difficult to be traced, but immediate and palpable. Yet this truth is rarely considered by those who have the common schools at heart. They are too often careless and indifferent as to the success of an academy in their midst. They look on it as the private concern of those who have it in charge, regarding it as a higher institution, the efficiency of which is a contingency which does not materially affect them. But it does and will, until that better day shall come when the whole state shall be covered with one grand system of graded schools, extending to the remotest corner, and

showering its blessings so impartially and plentifully that no cross-roads school-house shall be without its advantages.

But I would notice now a few of the evils of the present system, and show what a clog upon the regular academic work the common school is, as at present constituted. The first marked defect that a teacher who wishes to have an advanced school notices, is the deficiency of preparation and the lack of scholarly habits in those wishing to pursue the higher branches. He finds before him a number of masters and misses and not a few young ladies and gentlemen, all of whom expect to take the higher grade of studies belonging naturally to an academy. The slightest examination, however, assures him that hardly one of the number is competent to pursue the studies which his ambition prompts him to attempt. In too many cases the alternative is no school, or the acceptance of scholars unprepared for their work. And in any event it is a source of serious hindrance and vexation of spirit to the conscientious and earnest teacher.

From the loose way in which the common schools are carried on, and the utter lack of any thing like a course of study, the teacher finds before him a motley array. One has never studied grammar; "didn't like grammar, and the teacher never made him study it." Another is sublimely ignorant of geography. The researches of another have been confined mainly to percentage and interest, while still another, as one young man informed me, "has never had a teacher who could work in the back part of the arithmetic, and he never got much farther than percentage." Whether the experience of others is like my own or not, I cannot say, but, certainly, I have been able to find few, if any, who could claim any thing like a real mastery of the three elements, reading, spelling and writing. These, too often, seem to be beneath the attention of the average school teacher.

The community which complains that its academy is running down will do well to look a little closer home, to see if its own district schools are sending on the material on which the academy can work. No teacher wishes to risk his reputation where he has not good support from those whom he is to instruct. He may do wonders, yet he is judged by an outside standard. If his scholars do not occupy as high a position as others, the blame is laid at his door alone.

Another obstacle that obtrudes itself most vigorously upon his attention is the diversity of preparation. If he attempts to grade and classify, he is unable to do so, for no two scholars are at exactly

the same point, even if they come from the same school, and those from different schools are as far apart as may be. One teacher, with a mathematical turn of mind, sends on scholars who are well up in arithmetic, but almost totally deficient in grammar. Another, whose hobby is grammar, sends on some young marvels of parsers and diagrammers, who can hardly read the sentences which they manipulate so skillfully; while still another, with no taste for any thing, and no ability for teaching, sends on pupils proficient in nothing save the art of not learning a lesson. Of this latter class I fear that all of us, young or old, have seen full too many notable examples.

The question arises, where does the fault lie?

We find an answer quite complete and satisfactory by a close scrutiny of our present common-school system.

The methods of granting certificates by school commissioners, and hiring teachers by school trustees, make it certain that as long as they are continued, so long shall the common schools be places where ignorance and superficiality will hold high carnival.

All over the state we see the legitimate outgrowth of these defects. Incompetent teachers, in ill-ventilated, poorly appointed school-houses, give to the youth committed to their charge instruction just about commensurate with the salary received. Some farmer's boy spends his winter's interval of rest from farm labor, in earning a few extra dollars; or some girl, with a desire for more finery than her income will provide, gives a few irksome weeks to a disagreeable task. The school commissioner does not demand a sufficiently high standard of scholarship, and the school trustees, too often, look only for the cheapest. Of course, where a high standard is not demanded, it will not be found, and teachers will have just that degree of preparation required of them.

We see the results very plainly. They follow inevitably. The academy receives pupils half taught or wrongly taught, and must do the work of the common schools. The grade of the academy is, of course, lowered, and time and labor is wasted in giving a training which should have been provided by the district school. That such work is below the dignity of an academic teacher, I would not claim for a moment; but the child is cheated out of a culture which is rightfully his. Academies are founded to give a higher degree of education than the common schools, but if they are compelled to first bring their pupils to the academic grade, they cannot be expected to go far in their legitimate work. Many pupils who should be introduced by the academies to the delights of the higher education are

compelled to forego them, because they have never received that drill in the rudiments which is absolutely indispensable for successfully pursuing them. And so everywhere the energies of teachers are crippled, their efforts made of no avail, and their zeal neutralized by the radical defects of the common school system.

But not all the evils enumerated should be imputed to it. All the difficulties of the academy in its dealings with the scholars from the common schools do not spring from outside influences. It has much to answer for itself. If the district school sends in poor scholars to the academy, the academy sends out poor teachers to the district schools. It too often permits and encourages pupils to hurry on to a preparation for teaching, who should be held back to a rigid drill upon the rudiments. It is often far too easy in its requirements, and too slack in the application of such as it has. Very often it sets an example of feeble, frothy nothingness to a whole section of the country, and supplies it with teachers who shall carry out its bad example. If there is any one thing that will have a debasing effect upon the general educational atmosphere of a community, it is the presence of an academy whose only aim is to draw scholars though it do so at the expense of all true education. In a comparatively short space of time such an institution can strike a blow at the interests of a community, the effects of which shall be felt for years, and the recovery from which shall be slow and painful. If conductors of academies but realized the grave responsibility resting upon them, not only to those coming directly under their charge, but to the vastly larger number over whose education they are exerting such an influence for good or evil, we should see more care in the selection of teachers, and more energy and zeal in the management of our higher institutions.

These observations may be trite and common place enough to those of greater age and more experience in the work of teaching; yet, by reason of that experience, they may be inclined to be forgetful of their truth and importance. Most, if not all of you, have had more acquaintance with the evils of which I speak than have I; but I could wish to impress the feelings so strongly present to my own mind upon those older in the service, whose ardor in attack may have lessened from long contact with evils so deeply rooted, and so strengthened by time. Let us, then, do something. Every academic teacher has been cramped in his labors by these evils, every one recognizes them, and yet there are places where they seem the natural and permanent order of things. Their existence causes no remark. The people have gone to sleep with, apparently, a sweet

sense of security, and the wrong goes on. It is for the teachers of the state to see to it that this order of things is changed. The common schools are the nurseries of the country academies. On them depends the whole success or failure of the academy system. With good common schools, the ordinary academy could attain a grade equal to the best city high schools. Without them they must always expect to hold an inferior rank. The demand for action is imperative. No class is more interested than teachers of academies, and from them should come earnest and persistent efforts to elevate the standard, not of their own schools merely, but of common school education in general. The first problem that confronts young teachers fresh to their work is: What can be done to make those coming to us as academic scholars, more worthy of the name? An answer to this question, and united ardent effort to work out the desired reform, would be of untold benefit to the cause of education throughout the State, and an honor to all interested in carrying out a work of such paramount importance.

SIR WILLIAM HAMILTON AND OTHER TEACHERS OF PHILOSOPHY.

By Professor John W. Mears, D. D.,
of Hamilton College.

To strike out a great commanding system of spiritual thought, elaborated with herculean industry, and fortified with almost incalculable erudition, to extort for it universal respect, and to send it like a fresh current through all departments of intellectual activity, waking up kindred minds everywhere to sympathizing labors, and arousing to intensest antagonism other minds, thus bringing the most gifted of the age into the great circle of its influence, and creating a widespread intellectual ferment, a grand tournament of thought, this has been the privilege of the great masters of philosophy; this, in no small measure, was the achievement of Sir William Hamilton.

To accomplish such a work, among the people of Great Britain, is so much the more a triumph, and so much the more praiseworthy, as these people are unspeculative, severely practical and obstinately worldly-minded. With such persons a sensational and a material philosophy, if any, is likely to gain acceptance. Especially does the English mind seem to furnish an appropriate medium and to offer substantial encouragement to the sensational school. The great lights of English philosophy in former days, Bacon, Hobbes, Locke, Bentham, and in later times, Mill, Huxley, Darwin, Spencer, all belong to the empirical, sensational or materialist schools.

If Berkeley be counted an exception, it should be remembered that he was born in Kilkenny, Ireland, that he sojourned three years in America, and did his thinking in Dublin, Cloyne and Newport. Coleridge was a poet, hence his sympathy for German idealism. The Cambridge Platonists were theologians rather than philosophers. Indeed, it seems as if the English thinker must be either a poet or a theologian, if his philosophy is to escape the taint of materialism. Wordsworth, in his Excursion, develops Kantian ideas, as observed by Sir William Hamilton. The maintenance of a spiritual philosophy in English literature and in English thought is due rather to

the poetry of Wordsworth, the Brownings and Tennyson and to the general acceptance of the great spiritual verities of the Gospel than to the efforts of any English philosopher, strictly so called.

Widely different is the state of things north of the Tweed. The preëminence of Scotland in the higher walks of speculation is ancient, unquestioned and scarcely interrupted to the present day.

In the appendix to Sir William Hamilton's Lectures on Metaphysics, part of an introductory lecture is given, in which the appeal to the class in behalf of philosophical study is based on patriotism. The language of the lecturer is as follows:

"In entering on a course of philosophy of the mind, we ought not, as Scotsmen, to forget that in this is, and always has been principally founded, the scientific reputation of Scotland, and that therefore it would almost argue a want of patriotism in us to neglect a study with the successful cultivation of which our country has been so honorably associated." The lecturer goes on to say that in the fifteenth and sixteenth centuries there was scarcely a continental university without a Scottish professor. In France, especially, it is said, that a single prelate found places in the seminaries for a greater number of literary Scotchmen than were maintained in all the schools and universities of Scotland itself. Every man of standing in France who wished his son taught philosophy would have none but a Scottish teacher, and was as proud, if he succeeded, as Micah in the book of Judges was, when he secured a Levite for his household teraphim; and understood how Philip felt when he obtained the services of Aristotle for the young Alexander. Similar marks of preference for Scottish teachers were shown in Italy, Spain, Holland Hungary and Poland.

The English sensational school might have had every thing their own way, but for the searching, annihilating criticism of the famous Edinburg philosopher, Hume. He broke the sleep of the Empiricists of England, and of the Rationalists of Germany. All their philosophy was brought to the *reductio ad absurdum.* They must surrender philosophy itself as null, or must ascend to some higher fountain than experience for its source.

"The dilemma of Hume," says Sir William Hamilton, "is perhaps the most memorable crisis in the history of philosophy; for out of it the whole subsequent metaphysics of Europe has taken its rise."

Dr. Thomas Reid had quietly resigned himself to the idealism of Berkeley when Hume startled him to hesitate and inquire by showing that the reasoning of Berkeley, in which he acquiesced as dis-

proving the existence of matter, disproved, when fairly carried out, the substantiality of mind. Hence the reaction in Reid's mind; hence that which may be called the great doctrine of the Scottish school and of Reid's philosophy: the immediate knowledge of the external world in perception, which, under Hamilton's masterly handling, assumed a central place, such as had never before been allowed to it in the recognized systems of philosophy.

But what and whence is that great intellectual stir upon the continent of Europe? What mean those great gatherings of princes and nobles and eager people in the simple halls of untitled lecturers? What that rivalry among statesmen and rulers of different lands for the possession of these lecturers as ornaments of their kingdoms? What is that which men are wont to call an epoch in philosophy, developing from system to system, according to the necessary law of thought, like a universal pre-ordained movement of the human mind? It is equally with the movement in Scotland, a reaction from the negation of the Edinburg philosopher, Hume.

All that marvelous train of German speculation, with its overwhelming manifestations of thought-power, its victorious mastery of the weapons and appliances of reasoning, its vast and copious stores of learning, the magnificence of its ambition to grasp all things, in heaven and earth, in its philosophy — the phenomenon which, for half a century, filled the whole horizon of Europe, and sent its powerful influences into every branch of human inquiry, owes its beginning to the speculation of a Scotchman.

And what gives almost an air of romance and yet an obtrusive confirmation to this genesis of German metaphysics, the leader of the movement, Immanuel Kant, was the grandson of a Scottish emigrant, who came into Germany about the close of the seventeenth century and who spelled his name with a C.

Returning to Scotland and to that one of her great thinkers with whom we are specially concerned, Sir William Hamilton.

To Sir William, as a teacher, philosophy, in English-speaking nations, owes, perhaps, its very greatest single impulse. His immense and thoroughly mastered erudition, exceeding that of any British thinker who had preceded him, qualified him to speak with authority and commanded universal respect. His lofty estimate of his science, the sacred enthusiasm with which he pursued it, the historic dignity which he vindicated for it, exalted it to the highest pitch in the eyes of his pupils. The easy mastery, the boldness, the freshness with which he handled it, kindled and stimulated their

interest. The vigor and vivacity of his style, the simple unstrained energy of his diction, the massiveness of his polemics, joined with the keenness and rapid play of his weapons, the classic purity and academic elegance of his few but apt illustrations, the originality and independence of his prominent ideas kept the minds of the students awake and magnetised them as by the society of a man into genuine manhood. Said a bright student in the graduating class of '74, of Hamilton College: "I owe more to Sir William Hamilton than to any other author in the college curriculum."

It is true that the course of lectures which he gave by no means embraced a complete system. On some points as on the imaginative faculty, the discussions were slight and hasty. A very inadequate place was allowed to metaphysics proper. His own later views on some points have superseded the lectures. Nevertheless the fact remains that for the twenty years in which he held the chair of logic, Sir William was the means of inspiring and impressing young minds to a degree rarely equaled by any academic teacher. "Many are now living," says Rev. Dr. Cairns, of Berwick, one of his pupils, "who have experienced this shock in a high degree of intensity, and who connect it with a wide and definite enlargement of their intellectual horizon. Willingly do I recall and linger upon those days and months, extending even into years, in which common studies of this abstract nature bound us together. It was the romance, the poetry of speculation and friendship. All the vexed questions of the schools were attempted by our united strength, after our higher guide had set the example. The thorny wilds of logic were pleasant as enchanted ground; its driest technicalities treasured up as unspeakably rare and precious. Each lesson in mental philosophy opened up some mystery of our immortal nature and seemed to bring us nearer the horizon of absolute truth which again receded as we advanced. The play of the intellect with these subtle and unworldly questions was to our minds as inevitable as the stages of our bodily growth.—Life Hamilton, pp. 225, 226.

President Porter, of Yale College, after depicting with a masterly hand the great and wholesome influence of Sir William Hamilton's writings upon American thinkers, at a critical period, adds his own experience, as a teacher, as follows:

"I have used his lectures on metaphysics, ever since they were published, as a text-book for daily examination or recitation, in my classes; and though I have not always been able to agree with him, and have regretted that some topics were treated so briefly, yet I have preferred this to any other book for its stimulating and invig-

orating effect upon the minds of my pupils. Of more than one thousand pupils whom I have conducted through this course, I am confident the number is large who have been incited and instructed by his comprehension of the aims of philosophy, by his liberal culture, and by the strength and acuteness of his arguments and elucidations."

Since this was written, probably fifteen years have passed, and I believe nothing has been offered to teachers of philosophy worthy to take the place of Hamilton's lectures as a text-book. President Porter's own books have been published meanwhile, and though they are far more comprehensive, and, in fact, contain the best complete system of philosophy in the English language, and include some specimens of analysis in the subtle phenomena of perception and in other branches of the subject, nowhere excelled in keenness and originality, and although we may cheerfully concede to them the next place after Hamilton himself, in all that constitutes real teaching-power, no comparison can be drawn between the two. In fact it must be said that in Dr. Porter's books there is a marked absence of that which can arouse, impress and rivet the regards of the student. Invaluable as books of refer nce and sources of information, and creditable in the highest degree to American research and American speculation, they can never by themselves be successfully taught. They contain nothing of that secret of power, the sure recognition of which in Hamilton electrifies the susceptible, and stirs the mind of the dullest student. There is in Porter a conscientious minuteness too rarely relieved by illustrations ; a microscopic study which becomes painful to the unpracticed intellectual vision ; a style clear and satisfactory to the mature investigator, but wanting in that elasticity and nervous force needful to interest the young student. His views are sound, his vindication of all the great principles of the spiritual philosophy is satisfactory and well nigh exhaustive. Perhaps the effort to cover the whole ground, so manifestly neglected in Hamilton's partial and unsystematic lectures, has robbed the work of the interest it might otherwise have had. Whatever may be the fact, to carry on a class and to secure a lively interest in the study of philosophy, we prefer that which is partial and vigorous, unsystematic and fresh to that which is complete and yet drouthy.

The associational and semi-materialistic system of Bain is also very hard teaching, if indeed anybody desires to put our youth under the training which is furnished by that school of philosophy. Approaching the mind through the door of physiology, a large part

of Mr. Bain's mental science is especially devoted to facts not mental at all; while in those portions of the work professedly occupied by the intellect, every opportunity is taken to trace out and thrust upon us the physical relations of the intellectual facts. So that the phenomena of mind are presented from the lowest point of view, and the impression can with difficulty be avoided that the mental phenomena have been introduced rather for the sake of exalting the material. Mr. Bain in his Book II, on the Intellect, makes no account of consciousness, as such, and plunges at once into the details of the associational theory, the whole tone and type of which is notoriously materialistic.

Aside from these objections, the book is so written, is so severely methodical, so cold and colorless in tone and frequently so minute in its physical details, approaching even to a treatise in technical anatomy, so empty of stimulus, so powerless to widen the views, to stir the spirit and to kindle the enthusiasm of the student, that it is calculated to prove a wet blanket rather than an aid to the teacher endeavoring to interest a class in the trying path of metaphysical study.

As the result of examining the catalogues of twenty-five colleges including Harvard, Yale, Dartmouth, Amherst, Union, La Fayette, Princeton, Columbia, College of the City of New York, Cornell, University of Virginia, Trinity, Rutgers, Washington and Jefferson, Hobart, Oberlin, Lehigh, University of Pennsylvania, Madison, Hamilton, St. Francis Xavier and others, I find that Harvard last year exchanged Bowen's edition of Hamilton for Bain; Yale College, of course, uses Porter's Elements, in which she is followed by Dartmouth, Univ. and College of the city of N. Y., Oberlin, Madison, and Alcorn College, Mississippi; Cornell uses Wilson's Psychology; La Fayette and Washington and Jefferson use Haven, Missouri University uses Haven with Hamilton, Amherst uses Hickok, Columbia and Rutgers use Hamilton and Hickok, Hamilton uses Hamilton and Porter, while Trinity College, the University of Virginia, Louisiana State University, Union, Hobart, Lehigh University and the University of Pennsylvania use Hamilton, or did at the latest opportunity I have had of inquiring into their curriculum.

Princeton, and the University of Michigan, with perhaps others, rely chiefly on lectures, while the College of St. Francis Xavier maintaining the stately but obsolete methods of the mediæval philosophy, teaches metaphysics by daily lectures in the Latin tongue and by a Latin text-book entitled Elementa Metaphysics, by Jouin

A good text-book of psychology and metaphysics is still a desideratum, in spite of the excellent service rendered by several recent authors in this line; Hamilton is very incomplete, inferior in system to those who have followed him, but we prefer for teaching purposes the defective author who communicates a powerful impulse in the right direction, to the one who stands in monumental completeness and perfection, but who can only point out the way.

THE HEALTHFULNESS OF INTELLECTUAL PURSUITS.

By Principal John E. Bradley, A. M.,
of the Albany High School.

I propose, in this paper, briefly to inquire what is the ordinary and legitimate influence of mental activity upon the bodily health, looking, first, at the results exhibited in those who have been long engaged in intellectual occupations; and, second, at the effect upon the pupils in our schools.

That much has of late been said and written on this question, it is hardly necessary to remark. No small part of the recent additions to American literature have been on various phases of this subject, not a few of them implying, if not distinctly stating, that the best and most promising of our youth are annually being educated into their graves. I give one or two quotations of this kind, selecting not the most extreme statement, but from the most eminent authors.

"The truth is," says one, "that we Americans, having overcome all other obstacles to the universal education of the people, have thought to overcome even the limitations imposed by the laws of Nature; and so we were going triumphantly on when the ruined health of our children suddenly brought us to a stand. Now we suddenly discover that, in the absence of inquisitions and other unpleasant old world tortures, our school-houses have taken their place. We have out-grown war, we think; and yet we have not out-grown a form of contest which is undeniably more sanguinary, since one-half of the community actually die under present arrangements before they are old enough to see a battle-field. Can there be no peace society to check this terrific carnage?" A startling picture, certainly. I quote again:

"Is this magnificent system of public instruction, the glory of the world, to turn out merely a vast machine for public destruction? Look at it! As now arranged, committees are responsible to the public, teachers to committees, pupils to teachers — all pledged to extract a maximum crop from childish brains. It is the same system of middle-men which for years ruined the Irish peasantry, with

nobody ostensibly to blame. Each is responsible to the authority next above him for a certain amount, and must get it out of the victim next below him. Constant improvements in machinery perfect and expedite the work; improved gaugers and meters (in the form of examinations) compute the comparative yield to a nicety, and allow no evasion. The child cannot spare an hour, for he must keep up with the other children; the teacher dares not relax, for he must keep up with the other schools; the committees must only stimulate, not check, for the eyes of the editors are upon them, and the municipal glory is at stake; every one of these from the highest to the lowest, has his appointed place in the tread-mill, and must keep step with the rest; and only once a year, at the summer vacation, the vast machine stops, and the poor remains of a childish brain and body are taken out and handed to anxious parents: 'Here, most worthy tax payer, is the dilapidated residue of your beloved child; take her to the sea-shore for a few weeks and make the most of her;'" and much more, equally entertaining, and to the same effect, if we had time to quote.

But besides extravagant statements of this kind, it is assumed by many writers that the American people are physically inferior to their more phlegmatic European cousins, and that among Americans the brain workers are shortest lived; in general that mental activity and longevity are about in inverse ratio; that our earnest, faithful scholars are destined to early death or decrepitude, while the boisterous truant or obtuse laggard will grasp success with a strong hand. Especially is it assumed that great mental progress of individuals, of families, of communities, and of races, has generally resulted in deterioration of physical frame.

I cannot more fittingly indicate my appreciation of these theories than by relating an incident of recent occurrence. A short time after the death of Sumner one of the clergymen in New York city was commenting in a prayer-meeting upon our loss, and while generalizing from the apparent difficulty of finding a man to fill the the vacant place, he exclaimed, "The great and good men are passing away, and there is no one left to supply their places." At this point, while the rest of the audience were seemingly impressed with the truth of the sentiment, one venerable colored woman broke the silence of the period's pause by rising at the back of the room and very positively and energetically shouting, "I t'ank God dat's a lie." Her faith in the providence of the good Lord quite overcame her confidence in the veracity of her clergyman; and her state of mind which prompted her assertion must have been much like my

own as I read the strange deductions from these false suppositions.

Such melancholy assumptions and the anxious inquiries to which they gave rise as to how mental culture and activity can be made to co-exist with a serviceable body, how the pupils in our schools can receive a fair education without stunting their physical development, contorting their spines and blanching their cheeks — assuming in short that more people die young than formerly, and gravely pointing out what *must* be the fatal cause — such sorrowful discussions illustrate a strange credulity in our nature. Very wise men sometimes accept false suppositions as facts, and then give the whole force of their minds to explain and even defend them. This was illustrated by no less eminent a man of science than the late Dr. Emmons. He chanced on one occasion to be traveling by stage from Albany to Binghamton. His preference led him to ride outside with the driver, whom he plied with numerous questions relative to the objects of interest along the route. The driver, who was something of a wag and well posted as to the character of his distinguished seat-mate, at length thought it was his turn to ask a question. In the most deferential manner, as if sure the doctor could easily inform him, he inquired, "Why is it, sir, that white sheep eat so much more than black?" The great naturalist, perhaps thinking that his reputation was at stake, replied, after a little nervous hesitation, that it was "supposed to be owing to something in the coloring substance of the wool," and immediately inquired why *he* supposed it was? "'Cause there's more of 'em," was the laconic response.

Too much like this profound savant are those who attempt to account for incompatibility of high mental activity with good physical health, or the necessity of being a stupid or more likely a vicious scholar in order to become a successful man. Yet such a belief is, in some form or other, very extensively held. Only a few months ago, a distinguished physician of Boston showed, to his own satisfaction, at least, that the decay of national vigor is due, principally, to the excessive education of our girls, basing his opinion, apparently, on seven cases of poor health found in his extensive practice, three of which cases have since been proved by facts not to have been attributable to over-study.

To this unnatural and pernicious notion that intellectual growth and intellectual pursuits are ordinarily opposed to bodily health, I most unhesitatingly refuse assent.

First. Because it *is* unnatural. I find it difficult to believe that

we have not been so constituted that mental and bodily power should be symmetrically developed at the same time. The mind and the body are to co-exist, to work in harmony with each other; the inter-dependence is constant, the union complete. Why should they not develop together? Would it not be very strange if it should be found that we must build up one set of our powers at the expense of another set? No one will deny that the mental and spiritual part of man is as far superior to his mere physical organism as the eternal happiness it anticipates transcends the ephemeral pleasure of this life. Can it be that an Omniscient Creator has so formed us that the development of the mind shall in any way conflict with that of the body? that the highest and incomparably the most important part of our being must be checked in its expansion, lest it outgrow its frail tenement? Do the anologies of nature teach such a doctrine? What an arraignment of the wisdom of the Creator to suppose that He should have made man thus. I was shocked not long since by the statement of a German optician that a respectable workman ought to be ashamed of such a bungling piece of mechanism as the human eye. But his irreverence is fully matched by the presumption that the fullest development and highest activity of the soul consumes its earthly house and brings ruin upon itself. I say, then, that to suppose all our higher and purer aspirations and thirst for knowledge are unnatural; that the spiritual nature must be stunted, or at least neglected, in order to secure the growth and strength of the material structure; that in this supposed masterpiece of creation the Creator has failed to provide for the harmonious developments of the combined parts, making the mental and physical natures counter elements of a limited stock of vitality, each suffering in proportion as the other thrives, is illogical, is monstrous.

Second. I cannot believe that the public health is unfavorably affected by education, because in so many important respects good health depends upon instruction and knowledge. Who are best able to foresee and guard against disastrous physical condition, the ignorant or the educated? Who best understand the wants of the body? Who best know the laws of health and of disease? Who take the most precaution against cold and the whole tribe of disease resulting from imprudent exposure? Whose food is most judiciously selected and prepared? Whose clothing is best adapted to the requirements of the body? Whose labor-saving machinery is most abundant? Whose houses are most convenient? Whose surroundings most cheerful? Why, the "Art of Living" requires intelligence and good sense, qualities not possessed by most people without mental

culture! How much of the disease and physical suffering of humanity are the result of ignorance! Where do the contagious and epidemic diseases sweep with most unobstructed power — among the educated or uneducated classes? In which wards of our cities or districts in the country are the precautions and appliances of health, and the facilities and refinements of physical comfort found in greatest abundance — the intelligent or degraded? Whatever impressions we may have had, a little reflection would lead us to suppose that social culture and the dissemination of knowledge among the masses must be essential to the preservation of their health as of their morals. And we have facts confirming this view. Before the time of Jenner, contagious and epidemic diseases raged, generation after generation, with terrific power. Now, a new disease of malignant type, like diphtheria or meningitis, is soon mastered and despoiled of its victims, while barbarous and half-civilized nations are still almost annually decimated by some dreadful plague, from which intelligence would doubtless protect them. Therefore, whatever liability there may or may not be of over-taxing the brain in individual instances, it must be admitted that the popular diffusion of knowledge is an important safeguard to the public health.

But I go further and assert, thirdly, that physical vigor and power of endurance are directly and immensely increased by well expanded and well disciplined mental faculties, just as the effectiveness of an engine is increased by adding more steam. The material organism, however perfect and beautiful in its adaptation, is no more capable of self-action than a locomotive or any other piece of matter. It is only as a thinking principle animates and impels the body that it becomes good for any thing. Nay, more, it is the mind which sends out from its head-quarters, the brain, over a net-work of nerves, not only those mandates which direct the movements of the body, but also that mental and vital force which gives energy and elasticity to every fibre. And you can no more reduce or neglect this vivifying and energizing power without disastrous results, than you can turn off the steam or put out the fire of an engine without loss of mechanical power. The man who has few thoughts, not only has a stupid mind, but also an inert and inefficient body, weak in its movements, weak in its power of endurance, and especially weak in capacity to resist depressing influences and disease.

"We find that our poor scholars are poor gymnasts," said a teacher of much experience to us, not long since. Of course, just what you might expect. If the vital fluid courses vigorously through the veins, brain and muscle will be alike invigorated, and

prompt, energetic action will be the result. If it flows sluggishly, great intellectual activity is as improbable as physical force. The glow induced by calisthenic exercises quickens the mental action, and in precisely the same way, such training as keeps the mind on the alert promotes physical vigor.

Then, too, what resources within itself a well-trained and disciplined mind possesses. Emerson, a man of powerful feeling, and one who has passed through great trials, says, "I never had a sorrow or a trouble which I could not forget in fifteen minutes in the companionship of some favorite author." Few men have performed more intellectual labor than Robert Hall. It is safe to say that none have surpassed him in pulpit eloquence. He was an indefatigable student, learning Italian at sixty that he might enjoy Dante, and is declared by his friend, Sir James Mackintosh, a most witty and vivacious companion. And yet, throughout his long life he was the victim of an obscure disease of the spine, which caused him much intense suffering. There is not the slightest doubt that he, hundreds of times, endured paroxyms of pain which would have killed a man of weak intellect and power of will. "Ivanhoe," the best of Scott's novels, abounding in gorgeous descriptions and scenes of chivalric splendor, was largely dictated by its author while suffering from a most depressing sickness. The same glowing imagination and vivacity of thought which restored his health in this instance also sustained him under the heavy shock of financial disaster. In how many other instances has it proved true that a book was better than medicine. A bright thought or a cheerful companion has often accomplished what anodynes could not do. It is related that an English hyperchondriac imagined himself dying, and ordered a neighboring bell *tolled* that he might have the melancholy satisfaction of seeing how it would sound when it announced his death. It was merrily *rung* instead, and he was so indignant that he sprang out of bed and found himself cured, and proceeded to the belfry to administer corporal punishment to the perpetrator of so disrespectful a joke. What he had previously needed was stimulus, an incentive to action.

A cultivated mind finds relief and refreshments where another gnaws upon itself, and tortures its servant, the body. We live and act from motive, and he who can appreciate great motives and feel their influence, lives and succeeds where another fails and dies. It is stated, on the authority of President Fairchild, that young men brought up in the midst of refinement and culture of school and college, endured the hardships of our late war, while their more rugged

but uncultured comrades were broken down by disease or died of nostalgia. In many a perilous expedition, like that of Dr. Kane, men of less stalwart frame, but whose minds were enriched, and whose characters were elevated by the highest culture, have lived to bring their comrades who were selected for their physical strength, or bring them through by their superior endurance and enthusiasm. Women, the wives of missionaries on our western frontier, refined and cultured, endowed with true delicacy of perception and feeling, have borne up under the self-denials of emigration, and have withstood disease, while the illiterate settlers and Indians whom they have gathered in Sunday schools and churches have perished of fever or exposure. O, there is something grand in the supremacy of a well-trained mind over a well-kept body! What wonder that the mere dust, which constitute our material frame, should depend upon the vivifying form of the soul!

But we never find reasoning at variance with facts, and the facts have long been supposed to teach quite a different lesson. Have we been mistaken in our deductions, or is there a wide-spread misapprehension with reference to the facts? What do facts teach?

Fourth. Unquestionably, when rightly understood, the facts teach that there is more danger of overtaxing the body than the mind; that men engaged in intellectual pursuits live longer than laboring men; that children or youths in school or college enjoy better health then those out of school; or, as a distinguished college president recently said in this city, that sixty students study too little where six too much.

To be more specific, compare the faces of the boys in one of our schools with those of the cash or errand boys in one of our large stores; compare the young men in academies and colleges with the clerks and operatives of the same age. The girls are often thought to be the greatest sufferers from study, and yet, I confidently affirm though you search the country over, you will not find a healthier or happier assemblage of girls than is to be seen in one of the public schools of this State. Compare their looks as they leave school at the close of a day's work with the appearance of the crowds of poor exhausted creatures who hurry to their homes when the welcome six o'clock bell releases them from the mills and shops. "Ah, it is the factory children, not the school children that die," said an eminent physician not long since.

Statistics do not form a very convenient subject-matter for a paper of this kind, but a few statistical facts may be introduced. In the city

of Geneva the average length of life from 1600 to 1700 was 23 years, 3 months; from 1700 to 1750 it was 27 years, 9 months; 1750 to 1800 it was 31 years, 3 months, and from 1800 to 1835 it was 43 years, 3 months. I have no doubt that intelligence would be found to have advanced in about the same proportion. And Geneva may be fairly taken as a representative city in this matter; indeed, Dr. J. M. Toner, of Washington, says, and his statement is quoted and indorsed by the United States Commissioner of Education, that the average length of human life has been increased from 18 years in the sixteenth century to nearly 48 years at the present time.

A prolongation of life is evinced by English statistics. During the nine years ending in 1787, Dr. Heysham made his observations, on which have been based the celebrated *Carlisle Mortality Tables*, which give the average period of life remaining at any given age. These had been taken as the "expectation of life," in computing most of the life insurance tables, until comparatively a recent date; but in 1855, Farr ascertained that the average of human life had been increased in England two years and three months during the previous sixty years. Does any one doubt that the benefits of education had become gradually diffused in England in the meantime?

The United States census seems to indicate a similar increase in longevity; at least the death-rate is less than formerly. This fact, together with the circumstance that the policies are very largely taken by professional and literary or at least intelligent men, may account for the great increase and profit of the life insurance business. The reports of the companies doing business in Massachusetts for seven years ending November, 1866, show the ratio of deaths actually occurring to those laid down in the tables to be 100 to 136; that is one man out of every four computed in the tables to die during any given year, disappoints the doctors and continues to live. Let me add that laboring men are more frequently rejected by the insurance companies on account of physical unsoundness than professional or literary men. A physician in this city was examining surgeon for three companies, and observed that the agent of one of these companies found his men almost entirely among the laboring classes, while the other agents presented very few workingmen as candidates. Accordingly the physician made a record of the rejections, and found that the percentage of rejections of laboring men was more than double that of profesional men. In one instance eight men, from 20 to 30 years of age, were offered at once, all workmen in the same shoe factory, all supposed to be sound. Not

one of them was found to be free from heart disease, and five were rejected. All of these eight had gone to work in the factory when mere boys.

Perhaps you will say that these are exceptional cases. Let me quote from an article on "vital statistics," in Chambers' Encyclopædia. "It appears that at the age of twenty the following trades show an inferior expectation of life, as compared with the general results of rural, town and city districts, viz.: clerks, potters, printers, bricklayers, blacksmiths, mill operatives, plumbers, stonemasons, miners, coopers, hatters, spinners, tailors, dyers, sawyers, mill-wrights, town and city laborers,, shoemakers." All of these are notably short-lived.

Prefixed to the second volume of the United States census return for 1870 is a series of tables, prepared by E. B. Elliott, an eminent statistician, giving the average duration of life in different countries. Such tables cannot be copied here, but they utterly contradict the prevalent idea that Americans live fast and die young. For instance the average duration of life in Russia is 36 years, 7 months; in this country it is 39 years, 3 months; or a difference of two years and eight months in favor of America. In connection with this statement please notice that in ignorant Austria the deaths annually amount to $\frac{3}{4}$ per cent of the whole population; while in Prussia, the land of schools, the deaths are but $\frac{2}{3}$ per cent of the population. In Russia, which is, as Dr. Farr states, just emerging from barbarism, we find the highest death-rate. It is $\frac{3}{5}$ per cent; in Austria, it is $\frac{3}{4}$ per cent. In Massachusetts, where we are told every one has school "on the brain," and where mental activity and mental stimulus are at their maximum, we find that the per cent of deaths is but one-seventh, or in other words, that the deleterious effects of impure air in her factories, shops and crowded tenements, the excessive toil of her laboring classes to meet the intense competition of her towns, or to extort a scanty livelihood from her worn-out farms and fisheries; and even the extreme rigor of her climate, by which so many bronchial and pulmonary diseases are engendered, and other disadvantages, so numerous that I have not even time to recapitulate them, are all so much more than counterbalanced by the superior intelligence and forethought of her citizens, that the proportion of deaths to the whole population is but one-half as great as in unenlightened Austria and less than three-fifths as great as in sunny, luxuriant Italy. This fact and a great quantity of other statistics which might be cited, most unmistakably prove that directly or indirectly, edu-

cation promotes the health of the masses. I am able to make room for only one more fact of the same general character. It is that barbarous races are very short-lived. Travelers have uniformly noted the absence of old men among them. It is said to be very rare to find an Esquimaux over forty years of age.

But I claim not only the indirect hygienic benefits of education, but the essential healthfulness of intellectual activity. We will, therefore, look for a moment at facts bearing upon this point, although there seems to be little room left for doubt. By consulting the tables of mortality, we shall find that that profession whose labors are most incessant, whose lot is often cast among the most disheartening difficulties and profound anxieties — I mean, of course, the Christian ministry — enjoys the maximum of life. Next below the clergymen, in the average of life, are the farmers, the judges, the teachers, the doctors, the lawyers. To select an example or two from the abundant facts of this class which have been collected: Humboldt, Hobbs, Sir Christopher Wren, Herschel, Newton, Pestalozzi, Swedenborg, Dugald, Stewart, Kant, Dryden, Leilnitz, John Wesley, Wordsworth, Dr. Haney Linarns, Halley, the astronomer, and a galaxy of others whose names I have not space to copy, survived eighty, several of them survived ninety. Cross the ocean and you will find in equal testimony that mental culture is favorable to physical endurance. The average age of the fifteen deceased presidents of the United States was seventy-four and one-half years; Franklin, Irving, Beecher, Chief-Justice Marshall, Presidents Johnson of Columbia, Day of Yale, and Nott of Union, were all very old, some of them over ninety when they died. The triennial catalogues give eloquent testimony to the well-ordered and prolonged lives of college graduates. The average age of Howard graduates, deceased between 1851 and 1863, was 58 years. Yale graduates, deceased between 1841 and 1873 averaged 56⅝ years. From the Dartmouth Triennial for 1870, it appears of 743 who graduated before 1803, eight were still living, 66 were deceased at unknown age, and of the remaining 669, 390 survived 60; 275 survived 70; 114 survived 80; 15 survived 90, and one survived 100. This exhibit is probably unequaled by any necrological table except that of the antediluvian patriarch.

Although this paper has been hurriedly prepared in the brief intervals which I could snatch from more imperative duties, I have have found myself embarrassed as I have proceeded in its preparation, by the surprising accumulation of facts and arguments, all tending to confirm my conviction that health as well as power are

generally enhanced by mental discipline. I invite any one who doubts to examine the subject for himself, and have no fear for his conclusion that a prolonged and honored life is the reward of intellectual toil.

But some one will say: "Do you mean to imply that there is no danger of over studying? that poring over books twelve or fifteen hours a day is the best tonic you know? that young people have never been injured by excessive brain work?" Certainly not. There is the possibility of excess in study as in all other employments. This of course I admit. But that study is exceptionally dangerous, or that our school systems are destructive of the health of the pupils except in rare instances, I deny. In most cases of poor health, apparently induced by hard study, impure air, want of proper exercise, or something else is the real cause. Of older people the same is generally true, with this additional remark; it is care, trouble, worry, disappointment, that crush out life and hope. It is successful achievement, the exultant glow of

"Something attempted, something done,"

which renew them.

STATISTICAL REPORT ON INSTRUCTION OF COMMON SCHOOL TEACHERS.

Your committee on statistical report on instruction of common school teachers, report that they had one meeting the 31st day of July, 1873, and one the 7th day of July, 1874, and ask their chairman to present the following:

The following circular was sent to all the commissioners and superintendents of city schools in the State:

CLAVERACK, COLUMBIA COUNTY, N. Y.,
June 24, 1874.

The undersigned, having been appointed chairman of a committee of fifteen on a statistical report on instruction of common school teachers, at the last convocation of the university, wishes to obtain from you information on the following points:

1. How many teachers at present teaching in your district have received only a common school education?
2. How many have been educated in a graded school and have pursued therein studies above geography, grammar, and arithmetic?
3. How many have received instructions in normal schools?
4. How many have received instructions in academies or seminaries?
5. How many are graduates of college?
6. How many teachers are now employed in your district?
7. Is your examination of teachers in writing?
8. Do you approve of this method of examination, if the superintendent of public instruction will furnish printed questions?

The object of these statistics is to assist the commissioners in raising the standard of qualifications of the district school teachers, by recommending some general plan of instruction and examination, appropriate to the different grades of schools.

Any suggestion from you, as to the means of securing a higher standard of qualification of teachers, will be thankfully received. Also, in regard to the relative success of teachers from the different grades of schools, and with regard to the general school system.

We do not expect exact figures on these questions, and shall be fully satisfied with any approximate answers which your best judgment will direct.

If you are not able to write us at some length on these points, will you fill out the inclosed card, with figures corresponding to these questions, and drop it in the post-office.

The report will be printed, and a copy forwarded to you if requested.

ALONZO FLACK,
Chairman of the Committee on Statistical Report on Instruction of Common School Teachers.

We received answers from 62 commissioners and superintendents of city schools from every part of the state. We think these 62 reports fairly represent the whole state.

The following is the individual report of each commissioner and superintendent. In many cases only one commissioner in the county reported:

COUNTY.	Whole number of teachers.	Is your examination of teachers in writing?
Essex	100	In part.
Allegany	141	Yes.
Schuyler	125	Yes, entirely.
Chenango	165	Partly.
Oneida	151	Yes, sir.
Lewis	110	Not.
Orleans	(210?)	Yes.
Yates	112	Yes, when I have large classes.
Herkimer	115	Oral and written.
Ulster	100	No.
Jefferson	121	It is.
Jefferson	130	Yes.
Franklin	105	Yes.
Clinton	115	Yes.
Herkimer	113	It is.
Chenango	151	It is. I print my own.
Genesee	158	Mostly.
St. Lawrence	164	Oral and written.
Erie	109	Yes.
Washington	140	In writing.
Tompkins	97	Yes.
Monroe	115	Printed questions in writing.
Seneca	155	Both oral and written.
Orange	168	Yes.
Suffolk	74	It is.
Cattaraugus	148	Mostly.
Wayne	130	Yes.
Warren	148	Yes.
Newburgh, Orange	46	Yes.
Utica, Oneida	(159?)	It is.
Troy, Rensselaer	125	Yes, mainly.
Long Island City	38	Written and oral.
Hudson	24	No.
Elmira City	78	Yes.

COUNTY.	Whole number of teachers.	Is your examination of teachers in writing?
Huntington, L. I.	139	Yes.
Putnam	70	No.
Westchester	90	Partly.
Chemung	203	Yes.
Oneida	128	Yes.
Ontario	119	Yes.
Rensselaer	111	It is.
Cortland	90	Partly.
Sullivan	101	It is.
Rockland	76	Orally.
Queens	82	Both oral and written.
Otsego	200	Entirely.
Cayuga	215	Mostly.
Oneida	220	In writing mainly.
Wayne	376	Yes.
Steuben	163	In every case.
Dutchess	166	No.
Oneida	63	Oral and written.
Niagara	73	Partly.
Schoharie	106	Writing.
Tompkins	90	Writing, chiefly.
Greene	89	Partially.
Chautauqua	174	Part written and part oral.
Wyoming	104	Generally.
Fulton	140	No.
Niagara	116	Both.
Broome	124	It is.
Ontario	120	Yes.
Total	7,868	

The following are the answers under the head of question 8:

Yes.
Yes.
Prefer to furnish my own questions.
Yes.
Yes, sir; heartily.
I do approve of the method, etc.
I do.
I doubt the practicability of such a method.
Yes.
No.
I am strongly in favor of a uniform examination of the teachers of the state.
No, sir.
By all means.
I think it would be great assistance to many commissioners.
I do, sir.
I do.
Yes.
Don't think it would be as well for superintendents to furnish questions. I approve of written.
By all means.
I believe this to be much the best method of examination.
Yes, and I believe the superintendent should furnish the questions.
I approve most heartily of printed questions from superintendents.
No.
Yes.
I do most heartily.
I do, each commissioner furnishing his own list.
Yes, superintendent might render valuable service to schools and teachers by thus equalizing the standard of qualification.
Yes.

Yes, unless the standard is changed with every new superintendent.
I do.
Would not have any thing to do with such questions.
Written and oral.
Favorably disposed.
Not for cities; furnish our own.
I approve of this method.
Yes.
Yes, I should.
Yes.
Yes.
Yes.
I do.
For first grade only.
I do.
Yes, generally.
Unqualifiedly. I think the state superintendent should furnish questions and require percentage to be raised gradually.
I do.
I do.
Impracticable.
Yes — yes.
Yes, sir.
Writing, but make my own selection of questions.
Yes, commissioners exercise their judgment in certain cases.
Yes, three grades of questions.
Yes.
Should be glad to get questions from head-quarters, etc.
No.
Most decidedly I do.
I do most decidedly, and hope the plan may be reduced to practice at once.

The foregoing figures show that in the commissioner districts heard from, over 33 per cent of the teachers of the state have only a common school education and have studied only the common English branches. More than 22 per cent have pursued higher English above geography, grammar and arithmetic in graded schools and high schools. Over 9 per cent have received normaschool instruction. More than 33 per cent have received instruction in academies and seminaries. About 1¾ per cent have graduated in college. Nearly 92 per cent of the commissioners and superinl tendents have their examinations, in part or in whole, in writing.

About 78 per cent approve of the state superintendent sending the printed questions. Less than 20 per cent do not approve of the state superintendent sending papers, though all these have written examinations, but prefer to make out and print their own questions. Two out of 62 do not believe in written examinations at all.

From these figures we infer most conclusively that it is the judgment of the commissioners and city superintendents that it would be to the interest of the public school system, for the superintendent of public instruction to print and send to all the commissioners uniform questions for different grades of schools and different grades of certificates. If by this system we can raise the standard of qualifications in the teachers, we have made a very great advance.

It is a fact that thousands of uneducated, unqualified teachers to-day take the places of thousands of educated, qualified ones who stand in the market place all the day idle because no man hath hired them.

From the very many letters received from the commissioners and superintendents, all earnest and kind, we give the following short extracts from only eight. These extracts fairly represent the scope of the whole.

The first says: "It would be a great help to the cause of common school instruction if the questions for teachers' examinations could be printed by the state superintendent, and the per cent of correct answers for each of the three grades fixed. It would correct a great evil. A school commissioner is elected by the people. His office is political, and 50 per cent of the commissioners wish to hold the office a second or third term. Hence it is that so many unqualified persons receive certificates. Hence it is, too, that a man newly elected and wishing to act as the law directs, must meet with so much opposition and make so many enemies in undoing the work of his predecessor by bringing teachers from first to third grade, or no grade at all, and by insisting upon a knowledge of what is to be taught before allowing persons to attempt teaching."

The second says: "Many blame the commissioners when a certain per cent is required, and say the examination is "too rigid," the questions "too hard," etc., although not too hard at the same time for a scholar 12 years of age. This would be avoided should the state superintendent send out questions to each commissioner, and it would do more toward raising the standard of qualification than any other thing I can now think of. Many are fearful from personal and political reasons, to repress certificates or to raise and insist on some standard. I shall raise the standard whether it gives satisfaction or not."

Third: "One means of raising the standard of qualification would be to render attendance at teachers' institutes obligatory. Many will not attend unless they are compelled; and, as in many cases, trustees are opposed to having the teachers go, this furnishes a convenient excuse for non-attendance. Less than half the teachers in my district attended the institute last fall, and the session was fully as well attended as usual. My impression is that graduates of normal schools, other things being equal, succeed the best, make the most efficient teachers. I wish we had one normal school in the state with a classical course sufficiently extended to furnish principals to our best schools."

Fourth: "The code of public instruction is not plain concerning what the qualifications of a teacher ought to be. I wish the superintendent of public instruction would fix a uniform printed standard of questions and require commissioners to adhere strictly to them in

the examination of teachers, which would raise the standard of education. The majority of trustees in this county are disposed to hire *cheap teachers*, as they term it, or those whose qualifications, they say, are good enough for the children of their districts, as their scholars are not advanced. There is little or no inducement for young men and women to obtain a normal school or academic education, so long as they must come in competition with those having inferior qualifications, and who obtain about as much pay for teaching as those well skilled in the profession. A cheap teacher is always dear. A written examination (which should be changed twice a year), would exclude half the teachers of this county. It need not be very severe either. For years past, teachers here have obtained their licenses through the influence of friends, without any examinations. It is hard to get out of the old ruts. I have used every effort in my power to make an improvement, but have to be content with only an approximation. It only remains with the state superintendent to commence a weeding out amongst our teachers."

Fifth: "I maintain that we can't hope for improvement in our schools as long as we license girls and boys to teach the same schools in which they are taught. I have refused from 10 to 20 per cent of the applicants for certificates, and have not had as many deficient candidates this spring as I had one year ago, and have had more from our high schools and academies."

Sixth: Have long felt the need of a systematic method of examination. Find normal graduates almost always thorough and successful teachers, but they soon give up their business of teaching. Most of my best teachers are of academic and seminary education. From actual observation, I regard teachers holding state certificates as being below the average in ability and success. Think the present system of granting state certificates productive of great injury to our schools, and the certificates, generally, presumptive evidence of incompetency. Think powers of commissioners too circumscribed. They should be able to determine whether or not the teacher is competent to take charge of any one particular school in the district."

Seventh: "I cannot now write out my views in full on the best means of raising the standard of teachers' qualifications, but will simply say, that, in my opinion, such a result can be permanently secured only by uniform compensation to teachers by law."

Eighth: "I know of no means generally available that would be so effective of good, every way, general and special, as some uniform,

general examination under or by state authority, not unlike the regents' examination, modified in character and degree to conform to the object in view. It should be mandatory in so far that none should be licensed who come below a fixed per cent in departments named and come up to a required average in the whole curriculum. Above and beyond, let examining officers require such further evidence of qualification as their knowledge of supply and demand and circumstances may seem to require. As at present conducted, there is neither system nor standard in examinations nor uniformity in results. The good that some would do, they cannot from the influence of surroundings, while a better class are excluded from our schools by an inferior, who are at once elevated and liberally paid by the employment. Give us some system; any system rather than the present diversity. I have labored in every commissioners' convention and association to inaugurate something of the kind and propose to fight it out on that line."

THE FINE ARTS AS AN UNDER-GRADUATE STUDY.

By Professor George F. Comfort, A. M.,
of the Syracuse University.

A correct system of education must be based upon a comprehensive view of the universe in its totality. If any important element in humanity, or in the external universe, is neglected, the system will be imperfect, and will fail to develop symmetrical individual characters and to produce a perfect civilization.

Man is a compound being, composed of spirit and matter, having a body and a soul. His spiritual nature may be subdivided into the moral, the intellectual, and the esthetic faculties. Religion, science and art, in their various relations and combinations, cover all the ranges of activity of the human spirit. The word *science* is here employed in its true and comprehensive sense, not in its limited or popular sense as confined to the natural sciences. The term *art* is here used as a collective term for the fine arts.

The fine arts fall naturally into two grand divisions: First, the arts which appeal to the eye, called in English the formative arts, the chief of which are architecture, sculpture and painting; and, second, the arts which appeal to the ear, termed in German the sounding or speaking arts, for which we have no corresponding terms in English, the chief of which are music, poetry and oratory.

In America, moral, scientific and esthetic education occupy very unequal status. From the very earliest settlement of the colonies extensive provision has been made for the moral and religious education of the people. Education in science (using the term in its widest sense), though pushed with less vigor, has been provided for in certain branches, although the different portions of scientific education have been cultivated in unequal proportions and often in very unsystematic methods. But from the founding of Harvard College, in 1636, to the present time, very little opportunity has been given in any of our schools for instruction in the fine arts.

In our colleges especially, esthetic education is almost entirely ignored, the whole of the college curriculum being devoted to the scientific and the moral departments of education. Of art, in its theory, its history and its practice, the American college teaches nothing. The only modification of this statement is with reference to rhetoric and elocution. Of music, painting, sculpture and architecture, the American college curriculum contains literally nothing; and yet the graduates of these colleges are to be, more than any other persons, the moulders, the directors, the cultivators of public taste. They are to be our editors, and will praise, condemn or criticize, in the columns of their journals, the works of art that are from time to time produced. Rising to prominence in every department of business, they are to act as commissioners or trustees in the erection of buildings for schools, academies, colleges, universities, churches, hospitals for the sick, the blind, the deaf and dumb and the insane. On behalf of the commonwealth, they are to be charged with the erection of edifices for the city, county, State and nation. They are to decide upon the adorning of these buildings with paintings and statuary, and with the tasteful laying out of parks and other public grounds. As enterprising and successful men of business, they are to decide upon the architectural style and adorning of their own stores, factories, hotels, houses, banks, station-houses, and other buildings connected with railroad and other corporate bodies. First and foremost in every enterprise, they will especially need all the qualifications for the performance of their various duties. As many of these duties will thus require of them a high esthetic culture and general knowledge of the fine arts, this culture and knowledge should be secured to them in their college course, for after they enter upon their professional life, they do not and they cannot acquire such knowledge and culture.

The question will then arise, how far is it practicable to give artistic education and esthetic culture in our colleges without encroaching upon the courses of study as now established?

In answering this, we must bear in mind that the object of collegiate study is not to give professional attainment in any one branch of study, but it is to give good habits of mind and to lay the foundation of general culture to a class of advanced students, preliminary and preparatory to their entering upon the more limited field of professional study. If, in accomplishing these ends, it should be necessary to slightly reorganize the courses of study as now established, it will be no valid argument against introducing these new studies. It is wise to change and foolish not to change when valid reasons require the change.

The integrity of the college courses of study would not be materially disturbed by the introduction of the following studies: First, æsthetics, by lectures, twice a week during the first term of the senior year; second, the history of the fine arts, by lectures, once a week during the second and third terms of the senior year; third, free-hand drawing, by lessons, twice a week during the first term of the junior year; fourth, perspective drawing, by lessons, twice a week during the second term; and fifth, architectural drafting, by lessons, twice a week during the third term of the same year.

This would give an outline view of the theory and the history of the fine arts, to all who graduate from our colleges. With the foundation thus laid for the intelligent understanding of the fine arts, future reading will supplement this limited scholastic instruction, according to the tastes and opportunities of the individual graduates.

As the majority of collegiate students do not receive any instruction in the practice of drawing, drafting, or painting, in the preparatory schools, it could not be expected that the limited time thus given, during the junior year, to acquiring practical skill in drawing would usually lead to any great degree of proficiency. Indeed, professional proficiency is not expected, nor is it aimed at, in any of the studies in the college course; drawing thus will be no exception to other studies, as they are of necessity pursued in colleges. The limited time thus given to the practice of drawing, in its various branches, will, however, be of great use to every student, in enabling him to understand better the nature, the value, the merits and the defects of various works of art and of design, and will suffice to guard the graduate from making some of the many annoying, mortifying and ridiculous mistakes which even eminent and educated Americans so frequently make in judging, purchasing, and treating of works of art.

As drawing is now becoming more generally a branch of elementary education, in the primary and high schools, the time may not be distant when the majority of college students will have received some instruction in the rudiments of art, and thus the time given to this subject in college will be of more definite use and value.

The instruction thus given in the fine arts in the college can be most efficiently supplemented by means of museums illustrative of the history of architecture, sculpture and painting. With but limited appropriations for this purpose, a museum can be procured which will be of great value to the students. The formative arts

appeal to the eye. No description will be a substitute for seeing the works themselves. Reproductions, in plaster of paris, of all the important works of sculpture and of architectural details, can be procured at a limited cost. Photographs and engravings will give very clear ideas of the larger works of architecture, of all works of sculpture and of most paintings. A few thousand dollars thus expended will provide an art museum of far more interest and value to the college students than twice or thrice the amount expended in museums of geology, mineralogy or zoölogy.

As this department of study is of such importance, and requires such special attainments on the part of the professor, a chair of the fine arts should be established in the faculty of all colleges and universities. Though there are few in America who have received the peculiar training required for filling such chairs successfully, the supply would equal or exceed the demand soon after such a demand really exists. In the German universities there are always several professors of esthetics and the history of the fine arts. In the single University of Berlin, eighteen courses of lectures upon the fine arts were delivered during the last winter.

We can easily foresee how different will be the status of the public taste in America, when those who receive a liberal education in our colleges and universities, and thus become leaders in all departments of social and professional life, shall have correct knowledge of the fundamental principles of esthetic culture, and a general knowledge of the scope, the methods and the spirit of the several branches of art.

UNIVERSITY NECROLOGY.

PROFESSOR JAMES McNAUGHTON, M. D., of the Albany Medical College.

At a session of the University Convocation, held July 9, 1874, necrological notices being called for, Professor John V. Lansing, M. D., of the Albany Medical College, said: On Tuesday last, from a neighboring church, attended by long lines of mourning friends and citizens, were carried to their final resting place, the remains of an aged, eminent, and well-beloved physician of this city, the late Dr. James McNaughton.

He was in his life-time an active member of the Convocation, and delighted to participate in its proceedings and discussions. At the time of his death, he was one of the oldest teachers and lecturers in the department of medicine.

From his long-continued, great, and catholic influence in the direction of medical education, and from his past association with this body, it is believed that some record of his life should appear in the proceedings of the Convocation.

It has seemed to me that no fitter or more appropriate words, to accomplish this, could be chosen than those contained in the memorial address of the Rev. Dr. Smart, delivered in this city on Tuesday last. I therefore present them, and, if permitted, would move that they be entered in the necrological record of the Convocation, as follows:

"The few moments that remain of this service will hardly suffice to discharge worthily the duty to which we are summoned by the death of our venerable and honored friend and fellow-citizen, but I am sure his long and faithful service in this community, his well-spent and useful life, will not be forgotten. This is a duty we owe, not to those who have long served us, but to ourselves. They have passed beyond all need of human praise. Neither honor nor neglect can disturb their repose. But to forget the good, to cast into speedy oblivion a pure, sincere life, is ingratitude to that Infinite Goodness of whom all goodness is a reflection, and shows that we have ceased to honor those qualities of heart and mind which alone ennoble life.

"The death of a good man is no ordinary calamity to a community. In such a loss we must, however, bow submissively to Him who orders all things aright. But sadder still is the condition of a people when it can be said of them, 'The righteous perisheth, and no man layeth it to heart.'

"It is every way fitting, therefore, that we should in this public service testify our respect to the memory of one whose manner of life has been fully known in this city during years unusually protracted, and successful beyond what falls to the lot of most men.

"Dr. McNaughton, whose sudden death in Paris, on June 11th, startled our community and saddened so many hearts, has 'ceased from his labors.' It would be a sad commentary upon fidelity to duty, if we could not add 'and his works do follow him.'

"A few only of the more prominent lessons of his life can here be noticed. It is a very common mistake made by the world, in judging successful careers, to attribute them to good fortune rather than to personal worth and merit But while it is true that every man owes much to a kind Providence for his gifts and opportunities, it is still true that as much depends upon a faithful improvement of what God gives. Our departed brother was fortunate in many things, and it is fitting that we recognize the goodness of the Giver of every good and perfect gift to him in these respects. He was fortunate in his birth and opportunities for early education; fortunate in the finding early occasions to show his knowledge and skill; fortunate in the preservation of his powers down to an age when in most men they have greatly declined. But these alone do not explain his success: for that we must look to the diligent use and cultivation of his powers, which, through a long life, he so persistently pursued.

"Dr. James McNaughton was born December 10, 1796, in Kenmore, Perthshire, Scotland. He received from his father a sound bodily constitution, good principles, and the indomitable spirit of a true Scotchman. He was a student in the parish school of Kenmore, and acquired the elements of a good education and the knowledge of Latin, enabling him always to read it with fluency. In 1812, he entered the Royal College of Surgeons of the University of Edinburgh, and for four years continued his studies, receiving his diploma in 1816, bearing upon it such well-known names in the history of Medicine as 'Wishart,' 'Bell' and 'Abercrombie.' He continued his studies at Edinburgh for another year. It had been his intention to enter the navy, but the close of the Napoleonic wars defeated his purpose. Having accepted the position of surgeon on

an emigrant ship he landed on the 16th day of July, 1817, in Quebec, and soon after came on a visit to a distant relative residing in this city. Fortunately for himself and for this community, which he has so long served, he was persuaded to remain. He opened his office here in October, 1817, and for fifty-six years and eight months he continued to respond to all calls for medical service and advice. Soon after this, and while waiting for an opportunity to gain the confidence of the people of his new home, an incident occurred which greatly influenced his after-life. The body of a criminal, who had been executed, was surrendered to the physicians of the city, and it was determined to give a course of lectures upon anatomy with dissections. Dr. McNaughton was invited to begin; others were to follow. But he showed such aptness and skill that he was requested to continue and finish the course. This was the beginning of his long service as an instructor of others in medical science. In 1820, he was elected professor of anatomy and physiology in the then flourishing school of medicine at Fairfield, in the central part of this State. He remained connected with this institution for twenty years. In 1840, the Albany Medical College having been successfully established mainly through the persistent efforts of the late Dr. March, he was elected to the chair of the theory and practice of medicine, and remained in the active discharge of the duties of this position until the time of his death. In March last, he completed his fifty-third annual course of lectures. During this long period he has not missed a dozen lectures, nor been confined to his home a week by illness. These dates give but a faint impression of the amount of work accomplished and the great influence exerted through such unwearied and unremitting labors. About 2,200 students have graduated from the Albany Medical College during his connection with it; and as nearly as can be ascertained as many from the College of Physicians and Surgeons in Fairfield. And to this large number of 4,400 graduates is to be added double the number who have come under his instruction during part of their course, and graduated elsewhere. He was thus enabled to assist in the preparation of over 4,000 young men for the responsible and important duties of professional life. How impressive is the view of a teacher's influence here suggested. The early instructors of Dr. McNaughton have long since passed away from earth, but their influence which was exerted so favorably to the formation of his mind and character, crossed an ocean and for more than half a century has been steadily flowing out upon others, many of whom in turn have

become eminent and successful teachers. Thus the influence of the good and wise is not only perpetuated but is continually increased, and apparently shall remain while the race endures.

"Dr. McNaughton was an enthusiast in his profession. He made it the great business of his life to attain skill and success in his chosen line of duty and usefulness. He revealed this purpose most clearly in the thorough preparation of his early years, and in the fidelity and devotion with which he pursued it long after the bearing of its onerous duties were needed to bring either fame or fortune. His period of service covers an age illustrious for the discoveries it has made, and for the advancements attained in the treatment of disease; yet while naturally conservative and careful in forming and changing opinions, he found time to enlarge his knowledge by study and acquaintance with the latest theories of medicine. Among the oldest of physicians and the oldest in service as an instructor, he yet was as young as any of his brethren in the love of his profession, in fidelity to his duties, in jealousy for its honor. And to this completeness of professional character he added those graces which rendered him esteemed as a man and a citizen, and beloved as a friend. Independent and fearless in maintaining his own opinions in face of opposition, he was dignified and honorable in all conflicts, and grew in the wisdom of charity for all, as years advanced.

"Beyond these qualities, which gained for him the respect of his fellow-men, he sought to possess that which, in the sight of God, is of more worth — the ornament of a meek and Christian spirit. He made a profession of faith in Christ, and united with the First Presbyterian Church of this city in April, 1842. It is not our part to judge our fellow-man in this his highest relation to his God. We leave that to Him who reads unerringly the secrets of all hearts, the purpose of all lives. But we may speak of him as one of the most conspicuous founders of this church and its faithful friend and helper. We have every reason to believe that not by works of righteousness which he had done, but by the faith of the son of God, he sought to gain meetness for the Kingdom of Heaven. He was not one who made a boast of his religion, or who talked of the experience of the hidden life with God, even to his pastor. But I was permitted to learn incidentally the drift of his religious feeling. Early in the winter he brought to me a little volume entitled "Sacramental Exercises," by an ancient Scotch minister, saying that he had for years perused it with profit and pleasure. The tender and evangelical sentiment, the sweet flavor

of the cross which this little volume contained showed most plainly that a soul that could delight itself in such reading was accustomed to eat of the hidden manna.

"As a christian brother and fellow laborer in this church we lament his loss. To perfection he made no claim, nor do we for him. But with his sins and his faults we have no concern. We leave them all to that Divine Mercy in which he trusted, as we may hope, not in vain. It is the virtue, the example of the good that we should seek to rescue from oblivion and perpetuate in memory and emulate in life.

"Nor is it our province to lift the veil which covers the sanctities of life in the highest and closest relations of all. He will be missed by those friends who were wont to enjoy his generous hospitality, his ever fresh and youthful sympathy, and most of all by those who found in him not only a wise father, but a loving and sympathetic companion. There is no need to magnify this loss, or to increase this sacred grief by dwelling upon it.

"He was a son of whom his native land may well be proud, as he was proud of her storied history and illustrious names. As a man and a citizen, he was well and favorably known to those among whom he dwelt. As a physician, he was an ornament to the profession of which he was a member.

"To-day a long and useful life is closed; to-day a good citizen departs from among us; to-day a faithful physician's place is empty; to-day a father in Israel has fallen. Leaving us a few weeks ago for a period of rest well earned, but with natural powers unabated, he turned his face toward the scenes of his early childhood, and wished to look once more on the graves of his fathers, among the hills which skirt the shores of Loch Tay. This wish was not to be accomplished. He was setting out on the last pilgrimage of earth to the better home above; he was to go to his fathers an old man and full of days, but not amid the hills and valleys so dear to memory. It is the sweet hope that we are permitted to cherish that he has rejoined his kindred in the "better country, even the heavenly."

DAVID H. CRUTTENDEN, A. M.

By Prof. M. P. Cavert.

David H. Cruttenden was born in Charlton, Saratoga county, February 27, 1816, and died of paralysis at Castleton, June 21, 1874. When David was a few years old the family removed to Galway, where, following the custom of country boys, his life was spent in alternate work and attendance at the district school, in

which he acquired all the education he had when, at the age of nineteen, he first took upon himself the office of teacher in the school at West Glenville.

In the winter of 1835–6 he taught in the town of Ballston, and gained no little credit for the successful government and management of a school which for several winters had distinguished itself by turning its teachers out of doors. While engaged in this school he aided at the organization of the "Teachers' Association for Mutual Improvement of the town of Charlton" (the first of the kind organized in the State), was a constant attendant at its meetings and an active participant in its exercises. In after years he attributed to the influence of this association his desire for a better education for the work he had chosen. The association brought him in contact with students of Fairfield Academy, who induced him to accompany them to that institution, and enter upon a course preparatory for college. When he had spent a little more than a year at Fairfield, he returned to Galway and completed his preparation at the academy which had, in the meantime, been established at that place.

He entered the junior class at Union College, and graduated with credit in the year 1841. Finding that he could not effectively use the trade of cabinet-maker, which he had learned with his father, he promptly took up the trade of painting and papering to aid him in obtaining means for defraying his college expenses, those expenses being in part provided for by his maternal uncle, Samuel Baldwin, of Schenectady.

After leaving college, he held successively the Principalship of the Schenectady Lyceum, the Amsterdam Female Seminary, the Mechanics' Society's School of the city of New York and the Franklin Academy at Malone. While in the Mechanics' Society's School, he was married to Miss Louisa H., only daughter of Lyman Cobb, well known through his books to the schools of thirty years ago.

After leaving Malone, he was for several years superintendent of schools in the city of Binghamtom. From Binghamton he went to Michigan, where he lived the life of a farmer some three or four years, and whence, having sold his farm, he returned to New York in 1866, broken in health and nearly blind.

Several years previous he had written a series of three books on arithmetic, and a work in two parts on "sentential language," intended to take the place of ordinary English grammars in our schools. He engaged immediately on his return in revising and recasting these works, investing in them all his available means.

In September, 1869, on the invitation of the State superintendent of schools, he went to Maine, and, accompanied by that gentleman, when practicable, conducted teachers' institutes in all the seaboard and several other counties of that State, closing these labors in December, 1870.

In connection with Mrs. Cruttenden, his chosen aid in all his work with teachers, when allowed to choose, he conducted the normal school at Gorham, Maine, from the 13th of February, 1871, to the close of the school year in July.

In 1871, he accepted the professorship of Latin and Greek in the normal school at Oswego, which position he held for two years.

He was for more than twenty years one of the active working members of the New York State Teachers' Association, and, in the presentation of papers and discussion of questions before that body, contributed his full share to the interest and profit of its meetings.

In the teachers' institutes he has probably done more work than any other one in the State, and could point to sixteen years' successful conduct of a single institute (Suffolk county), a record of appreciation of service which no other teacher in the State can show. For several years he was connected with the Saturday Normal School of the city of New York, a field of labor which he highly prized, and where he did effective work. Very few, anywhere, have had the privilege of wielding an influence upon so large a number of teachers.

As a man, Mr. Cruttenden was frank, generous and honorable. He never abandoned a friend or betrayed a confidence.

As a teacher, he regarded the successful emancipation of mind his greatest reward. Himself a man of independent thought, he strove to lead others to the same plane of independence. While in his lectures — teaching by lecture was his favorite method — he sometimes of necessity seemed dogmatic, he said to his pupils, "come, let us reason together."

Systematic and logical in his work, he labored to teach his pupils how best to cultivate the habit of attention, and the imperative necessity for such habit if they would succeed; the best method of improving the memory; how to compare fact with fact, and proceed step by step with a chain of reasoning; the means and necessity for the cultivation and proper control of the imagination; the law of evidence; the rules by which they should be governed in the reception of alleged facts, on the testimony of others; the laws of association—how new facts acquired may be allied with facts already

in their possession; and how, with all these, their stores of knowledge may be arranged, increased and employed.

Nor, in his teaching, did he forget the higher life of those under his charge. He was himself a praying Christian, and did not fail to direct them to the Great Teacher, as the only guide in whom they could securely trust.

To say that he always succeeded would be saying too much; but it is not too much to say that, such was the measure of his success, that the cause of education in the State of New York is to-day largely his debtor.

Fuit: tamen in aliis vivit.

PROFESSOR SAMUEL DARWIN WILCOX, A.M.

Professor Samuel Darwin Wilcox, son of Dr. Samuel S. Wilcox, was born in Napoli, Cattaraugus county, May 10, 1846. His preparation for college was thoroughly made at the Randolph Academy, while it was under the care of Samuel G. Love, now principal of the Jamestown Collegiate Institute. He was graduated from Hamilton College in 1866. His four years in college were marked by frequent tokens of successful effort, closing with the valedictory oration. He went from college to the Cortlandville Academy, and was one year a teacher under Rev. Henry M. Dodd. From Cortlandville he was called in 1867 to the responsible post of a tutor in Robert College, near Constantinople. After two years in Robert College, Professor Wilcox resigned his position there and spent a year in most enjoyable and profitable travel and study in Palestine, Greece, Italy, Germany and France. He returned to America in the summer of 1870, and found himself in Clinton at the time when Professor Upson resigned the Kingsley chair of rhetoric and elocution in Hamilton College. His election to the vacant professorship followed so naturally, and with such hearty indorsement from the friends of the college, that it was confidently hoped Dr. Upson's long-continued usefulness as a college instructor would be repeated in the history of his successor. But it was not so to be. With all his various gifts and attainments, Professor Wilcox had not acquired the art of using his strength with prudence and economy. He was never known to shrink from the path of duty, or to slight a difficult and perplexing work. His intellect and heart, his strength and time, were fully consecrated to the duties of a delicate, exacting, and most trying position. He prepared himself to be examined by the Utica presbytery as a candidate for licensure, and was accepted in July, 1871. After the

commencement of 1872, Professor Wilcox passed through a severe illness, and entered upon the work of the following term with broken health, but no lessening of his labor. The winter of 1872 found him wholly unfitted for continuous work, and in July following he resigned his professorship. In the fall of 1872, he joined the sad procession of invalids that annually moves southward, and took up his abode in Jacksonville. He could not be idle, and a part of his time was given to editorial work on the Jacksonville *Union* and Florida *Agriculturist*. He left Jacksonville near the close of February, and reached the home of his father, Dr. S. S. Wilcox, in Napoli, Cattaraugus county, March 3. From this period, all hope of recovery was abandoned: his decline was very rapid, and the peaceful end came, with the Christian's sustaining trust, on Tuesday, March 31, 1874.

The years of Professor Wilcox were not many, but life is not always to be measured by weeks and days. He was a diligent, earnest, cheerful Christian worker. His aims were always unselfish and noble. The good he has accomplished will not be buried in his early grave. His graduating oration on "True Friendship" shed light on one of the beautiful traits in his character. He formed very strong personal attachments, and his death will be deeply mourned on the beautiful Bosphorous and under the Acropolis at Athens, not less than on College Hill, in sunny Florida, and the quiet village of his boyhood.

PROFESSOR EVAN W. EVANS, A. M.

Professor Evan W. Evans, who recently occupied with merit and distinction the chair of mathematics in Cornell University, died at his residence in Ithaca, May 22, 1874. His disease was a lingering consumption, under which he has been wasting away for several years, with no hope of recovery.

Professor Evans was born in Wales, but when quite young his father emigrated to this country. As a boy he received a thorough elementary education, and was sent to Yale College where he graduated in 1851, with the valedictory oration. He stood high in college, always took the first prizes in mathematics, and was noted as an English scholar and writer. Among other honors he bore off one of the much coveted Townsend prizes in English literature. He was one of the first editors of the Yale *Literary Magazine*, one of the best college publications in the country. While excelling in mathematics and philology, he was a good botanist and

geologist, and seldom failed to accomplish whatever he undertook. After leaving college, his career was brilliant and successful. He was distinguished as a writer on science, philology, and in various other departments of education. His later studies were principally in Cymric philology, in which he was undoubtedly the best scholar in America. A prominent editor in Wales wrote, recently, thanking him for an article on this subject, and said: "You are the first Cambro-American who has ever contributed any thing to Celtic literature." The Germans have also recognized his attainments in this branch of literature.

For several years, Professor Evans occupied the position of principal of Franklin Academy, in Delaware county, and just preceding his call to Cornell University, was professor of mathematics in Marietta College. He was the first professor appointed in Cornell University, and resigned his position some two years ago only because of his failing health. He went south in the hope of improving by a change of climate. It proved to be of no avail; he returned after a few months without improvement, and with christian resignation prepared for the end of his earthly work. Professor Evans leaves a wife and two children.

PROFESSOR PHILIP M. W. REDFIELD, A. M., M. D.

GENTLEMEN — Inclosed you will find papers of testimonial in reference to the late Professor Redfield, from Superintendent Kiddle, Professor Hunter, president of Normal College, and the Rev. Mr. McVickar.

A longer time would have given opportunity to obtain many more of like import.

Philip M. W. Redfield was born in New York city, January 12, 1826, and his death occurred at his residence in Harlem, November 29, 1873.

He belonged to the class of 1846. He taught in the grammar school of the University at a very early age, having already been for some time engaged in private teaching.

He took his degree of A. M., June 27, 1849.

The records of the university will also show what professorships he held there.

The time allotted has been inadequate to obtain full statistics and information.

He received the degree of M. D. in the spring of 1871.

July 7, 1874. HARLEM.

In 1867, Professor Redfield became an instructor in the New York Saturday Normal School for teachers, and continued to occupy that position until the discontinuance of the school, about three years afterward, to make way for the Female Normal College. His lectures to the students in English literature, logic, and physiology, while in this position, attracted very great attention, and were universally admired for the completeness with which the subjects were treated, the fluency and beauty of the style in which the lectures were delivered, and the force and richness of their illustrations. Professor R., indeed, displayed, during the whole course of his instruction in this position, the fruits of ripe scholarship and culture; and his influence upon those who attended at his lessons was most genial and salutary. This was not due solely to his high intellectual attainments and ability, but as well to the inherent worth and nobleness of the man — qualities that shone forth in all he said and did. He had a large and generous heart, a most kindly nature, and a fearless devotion to principle which made him ever consistent in his conduct, and, by the very contagion of excellence and amiability, won the regard and affection of all who were brought within the circle of his influence.—[Supt. H. Kiddle.]

Professor Philip M. W. Redfield, A. M., M. D., was appointed by the committee on Normal College and by the board of education to the chair of Natural Science in the new Normal College of the city of New York, on the 14th of February, 1870. He was selected for this important position chiefly on the recommendation of Commissioner William Wood, who had been greatly pleased by witnessing a course of lectures delivered by Professor Redfield in the Saturday Normal School for teachers. From the very beginning of his career in the Normal College, the professor became a great favorite with his associates and with his classes. He brought to his work a ripe scholarship, a rare experience, untiring industry, and a manner and bearing the most affable and amiable. His powers of expression were admirable, and his voice possessed that rich, magnetic tone which always attracts attention.

The subjects under his charge were geology, mineralogy, physiology, zoology and botany. Although he himself chiefly devoted his exertions to physiology, anatomy and hygiene, his supervision extended over all the tutors in the other departments. During the few years that Professor Redfield was spared to us, he performed a most useful and noble work. He created and fostered a taste for those studies which have the most beneficial effect on health and happiness. The results which he achieved, under the circumstances,

were simply marvelous. For four hours each day he continued to lecture and to teach with a vim which the strongest constitution could not stand, and when remonstrated with, invariably replied, "We have a great work to do here, and I cannot spare myself." His great ambition was to build up a college for women in the city of New York worthy of her imperial position. In this manner Dr. Redfield continued to work for nearly three years, until suddenly stricken down with consumption. Such was the estimation in which he was held by the board of education, that his salary was paid him for more than a year — the period of his illness. The College, the cause of public education, and, above all, his associates in the faculty, suffered by his death a loss which we feel to this day as irreparable.

THOMAS HUNTER.
President Normal College.

A Grateful Testimony.

It has been to my profit and happiness to have known Professor Redfield more or less intimately at intervals during the last one and twenty years; at first as a grateful pupil and last as his chosen and, I may hope, his acceptable friend and pastor. Hearing thus that there is to be some memorial of his life and services presented at a meetin of the Alumni of the University, I gladly respond to the request of his bereaved wife to place on record my appreciation of his high merits.

The details of his career most properly belong to the work of others. Let me simply speak of him as the man and professor at whose feet I gladly sat, and to whose careful and judicious training, I do not hesitate to ascribe whatever I owe to early mental culture, and with whom in after years I have spent profitable hours in discussing the urgent needs and prospects of our present system of education, which was his especial anxiety, and to whose reformation he devoted his energy and at last sacrificed his life.

To a mind naturally acute he added a wide culture, and above all a mature and analytic judgment. He knew personally the scope and value of knowledge but he valued, and valued rightly, above all other needs of education the awakening and development, the "*e*"-"*ducation*" of the powers of the mind, believing "that all things needful should be added unto them."

For this reason he was the natural foe of any scheme whose relentless purpose was the crowding of the young intellect to its

bewilderment and paralysis with crude facts, whether historic, philosophic or scientific. His idea and plan was step by step according to its great law and normal growth, to pursue the subject in hand, going by logical stages from the known to the unknown, using facts and laws as illustrations, which in the process became unconsciously the ineffaceable property of the disciplined mind. The student under his voice and direction was sure to find "the ways of wisdom" and to find there "paths of peace." His system was the everlasting overthrow and discomfiture of the mechanical drudgery of the past, whose appropriate symbol was the cane and birch; and whose legitimate offspring were stunted and enfeebled powers, crushed out beneath a mass of heterogeneous and unassimilated facts.

So reformed and exalted were his ideas of his high profession and in such a line his purpose, should he ever have an opportunity in the broad field of national education.

The coveted opportunity came when he was offered the chair of natural sciences in the New York Normal College. Of course he entered upon his work amid almost an unanimous opposition as to plan from those who belonged to the old regime; but before half a decade of years had passed, he had not only silenced loud opposition, but had gained many of its old foes to the adoption of the system, of which I think he may rightly be said to have been a pioneer. Moreover, I believe that through these and many more who shall yet be born into its wisdom, countless numbers of children who shall be brought through his method to a knowledge of truth in the near and far future, shall have cause to bless their unknown benefactor.

I have made his system and method more especially the text of my thought in these grateful lines, and have delineated the teacher, leaving to other pens a wide field. I might add much more, even in this connection, of the kindness and generosity and conscientious faithfulness which characterized this as it did all departments of his life; and which none so well knew as those who have found him a friend in need, mental or material. But this must needs close this hurried notice. Trusting that his influence will long be felt in those branches to which he devoted himself, and feeling sure that his memory will long keep green in the hearts which knew and loved him, I record myself his pupil, friend and pastor,

W. NEILSON McVICKAR,

Rector of Holy Trinity Church,

Harlem, N. Y.

REV. SAMUEL WARE FISHER, D. D., LL. D.

By President Samuel G. Brown, D. D., LL. D., of Hamilton College.

On the evening of the 11th of May, 1870, Rev. Dr. Fisher, then pastor of the Westminster Church in Utica, was occupied in his study in the church in preparation of a discourse to be delivered before the Presbyterian General Assembly, which was to meet in Philadelphia on the 19th of the same month. On his way home, at a late hour, he called upon one of his parishioners who was suffering from illness. He was apparently as well as ever — genial, social and sympathizing. The next morning we were astounded by the intelligence that he had been seized in the night by something like apoplexy, was lying insensible, breathing heavily, and apparently with little hope of returning to consciousness.

After several days, however, during which the balance was trembling between life and death, he rose again to partial recovery. But the injury was too deep to be remedied. He had lost the command of language, and, though apparently conscious of what he wished to say, was unable to say it. Words signifying something unlike what he meant, or even contrary to it, came first to his lips, and we saw painfully illustrated a singular form of cerebral disturbance. There remained nothing but to wait the gradual and slow process, if it might be, of organic or functional restoration, as the result of improved general health. After many months, however, during which there was no very marked change in his condition, and the prospect for the future seemed to afford little hope, he thought it best to ask for a dissolution of his pastoral relations.

Having thus become independent of official responsibility, he concluded, after a time, to seek a home in the neighborhood of Cincinnati, where he had passed an important part of his professional life. At College Hill, in the vicinity of old and valued friends, his children and other relatives within easy call, he found a quiet and pleasant home. His life flowed equably onward, and although his mental vigor and self-command did not return, neither, on the other hand, did his health appear very sensibly to fail. The end, however, came at last nearly as suddenly as the first attack. On the morning of January 18, 1874, in consequence, apparently, of a sudden physical exertion in trying to relieve an animal entangled in the stable, the delicate structure of the brain gave way. Returning toward the house he fell upon the snow and died without a sigh.

It seems eminently proper that some mention should be made in this convocation of one who had much to do with its original organization and with the shaping of its plan.

Samuel Ware Fisher was born in Morristown, N. J., April 5, 1814. His father was for many years the minister of the Presbyterian church in that town. In 1835 Mr. Fisher was graduated at Yale College, and spent the next year in Middletown, Conn., engaged in teaching. He then entered the Theological Seminary in Princeton, where he passed two years, completing his course of professional study afterward in the Union Theological Seminary in New York. He was conspicuous as a student, and his name at that time was frequently mentioned as among those of whom much was expected.

After finishing his professional studies, he became the minister of the Presbyterian Church in West Bloomfield, N. J., from which he removed in 1843 to the Fourth Presbyterian Church in Albany, where he remained until invited, in 1846, to the Second Presbyterian Church in Cincinnati. After eleven years of laborious service in the great commercial city of Ohio, he accepted the Presidency of Hamilton College, and removed to Clinton in 1858. He remained at the head of the college until 1866, when he assumed his last public charge, as minister of the Westminster Church in Utica.

If the proprieties of the occasion required or allowed, it might be easily shown, that in all these positions there was demanded, for even a reasonable degree of success, large intellectual attainments, independence of thought, and vigor of administration. Both in Albany and Cincinnati he succeeded the most popular, successful and powerful preachers of the religious body which he served, men whose presence was an inspiration, whose courage, skill, self-devotion, and variety of resources, had gathered about them large congregations, and whose names were well known far and wide. That he should have been solicited to succeed such preachers and theologians as Edward N. Kirk and Lyman Beecher was, in itself, proof of the estimation in which he was held by his own denomination. That, following such men, he was able to maintain his position with ever increasing respect and influence, an influence effective with all classes, yet strongest, perhaps, with the strongest, is proof of native intellectual vigor, of ample cultivation, and of steady devotion to the high ends which he had set before himself.

If I may venture to repeat what I have said elsewhere, I would

add that, as a preacher, Dr. Fisher must be held to rank among the ablest in the Presbyterian body. With all that may be said by way of detracting criticism, it must still be allowed that our religious communities move along a high level of intellectual experience and of religious feeling. To satisfy the reasonable demands of our congregations, requires a continuous intellectual exertion which, when we come to measure its force, is something startling. I do not wonder that so many poor sermons are preached, but rather that there are so many good ones. But Dr. Fisher moved above, far above the common level. Within the ample dome of that forehead, you felt at sight, there dwelt a powerful brain. He brought to his discourses a mind well stored and well disciplined. There was a fullness and richness of thought which left little or nothing in that direction to desire. An intellectual hearer could not fail to be attracted by his vigor. His method was synthetic and rhetorical. He seized upon great truths, enforced them in a grand and generous manner, and brought them to bear, as a whole, upon the minds of his hearers. His style was often bold, sometimes picturesque, almost always clear and direct. His words were well chosen and exuberant. Thus full and weighty in matter, affluent in language, with no ambiguity in expression, fertile in imagery and illustration, with a voice clear and penetrating, and a manner somewhat authoritative, it is not surprising that he was often sought for to address public bodies on important occasions, a duty which he always performed with dignity and to the satisfaction of his hearers. The subjects of his discourses were various, and, as his mind was mainly occupied with grand and lofty themes, so there was a certain nobleness, freedom and power of development, the natural and necessary fruit of his general studies and habits of thought.

In assuming the Presidency of Hamilton College, he succeeded Rev. Simeon North, a scholar of great purity and beauty of character, of rich experience and wide attainments, who, after winning the highest academic honors at Yale, and for ten years occupying the chair of Greek and Latin in Hamilton, had for eighteen years longer presided over the institution which he had done so much to raise and establish, and where his name will ever be held in deserved honor.

Dr. Fisher came to this position with a large general experience, and with distinct and positive opinions as to the true scope and best methods of the higher education.

In all the addresses which he delivered on educational and literary topics, on such themes as the "Supremacy of Mind," "Secular and Christian Civilization," "Natural Science in its relations to Art and Theology," "History the Unfolding of God's Providence," "Female, Collegiate and Theological Training"— in all these I discern certain general ideas of which his mind evidently held a strong grasp, and which formed the fixed points about which all special and particular plans, in order to succeed, must, in his judgment, revolve. Such, for example, loosely stated, are the following:

1. In liberal education, the broadest and soundest culture must be sought.

2. A due proportion and harmony should be maintained between instruction and discipline.

3. The results tested by long experience are not to be hastily put aside.

4. Culture should be adapted to the ends sought to be attained.

5. The culture of the lower elements of our complex nature should be subordinate to the developments of the higher.

6. The supreme claims of the Christian faith as a necessity in the highest and most complete education.

These ideas and similar ones, though not in these words, not in this order, he insisted on with the constancy and force of deep conviction. He was eloquent and earnest in urging the study of the Bible as a text-book, — in giving to its literature, its history and poetry, as well as its moral and religious truths, the prominence which he thought necessary for the noblest culture of the complete man. It seemed to him historically demonstrable that the pureness and freedom of the English speaking races were ultimately connected with their Christian faith; that the breadth of our civilization, as well as the firmness and permanence of our government, were due to the prevalence of Christian ideas, early inculcated and ever held in high honor. So he would bring the best methods of Christian education to the support of the State. For he thought he saw that these Christian ideas, permeating the minds of the people were the only ones which could insure stability to free institutions, and save us from following the wild and uncertain courses of those nations in the old world which have vainly striven to copy our institutions and secure our privileges.

He did not, however, insist upon these views in a narrow or exclusive spirit. He maintained them resolutely because he believed in them, but he did so on broad grounds.

Perhaps I cannot better illustrate his principles or his method than by a brief extract from his discourse on collegiate education.

In opposition to those who would substitute a technical for a liberal education, who would humor the special aptitudes developed in boyhood, aptitudes or inclinations which may after all be the result of accident, or of opportunities, to indulge which unchecked may only increase the natural disproportion between the faculties, he argues for a more generous culture. "We will teach the mathematician," he says, "how to master language; we will chasten the poetic imagination by the drill of abstract science; we will teach the man of verbal memory to go through difficult processes of reasoning; we will endeavor to cultivate in all the power or profound reflection and just discrimination, so that when they go forth into life, it will not be with a partial, a distorted, a one-sided intellect, a mind that has ability only in one line, and is prevented by its very training from advancing in any other. The system of collegiate discipline thus seeks to give breadth, solidity, proportion to all the powers. * * It leaves special attainments for after study — individual choice. It supposes that the Grecian, the mathematician, the rhetorician will be vastly more accomplished as scholars, and not at all less accomplished in the specialities they have chosen, by having thoroughly mastered the entire circle of college studies."

And then afterward he goes on in a noble vein of generous thought, to portray the large effect of mastering the general elements of the whole system of truth by which we are surrounded. "From this so wide range of knowledge," he says, "the student not only acquires the materials of illustration, which contribute so powerfully to the success of the orator, but he finds these principles so allied to each other, that in whatever direction he pushes his investigations, spontaneously they send in their contributions. Lights flame out on every side. He stands in the center. He concentrates their blaze into an intenser light upon the subject he is seeking to penetrate. They guide and illustrate the student's path. * * They expand and ennoble the forensic efforts of the lawyer, by bringing the science which he wields for the cause of justice into sympathy and union with the profoundest principles of divine law. They give comprehension and elevation to the statesman, teaching him how human government hath its roots in a sublimer system of order, that hath its seat in the bosom of God."

And then, in words which deserve to be repeated and remem-

bered, he closes with a noble summary of the importance of these institutions, and their claims on good men who wish well to the State. "These christian institutions," he says, "are not only tributary to the diffusion of a correct literature; they are equally essential to the advance of religion and the highest civilization. They go down in their influence through all society. They build up the common school; they rear the academy; they aid the press; they cultivate art; they refine the rude; they multiply the sources of wealth; they qualify men for positions of trust and influence; they stand among the foremost guardians of the liberties of the State, and impart to her the lustre of high intelligence. They minister at the bedside of the sick; plead in the forum of justice; utter their judgments on the bench; frame laws in the halls of State; proclaim the Gospel in the pulpit, and send forth their words of light and truth to delight, ennoble and mold the minds of the millions of our stirring population. They give us influence abroad; they rule on the sea and the land; and wherever the attribute of intelligence joined with just principles is mighty, there their works are seen, their influence felt. Shall such institutions as these fail of the appreciation and support of a noble people? Shall a State like this be a pensioner on others for that higher education which she seeks for her children? Will not her men of wealth covet for themselves the honor of building higher the walls of these institutions?"

Besides the direct duties of supervision and instruction, there were others in which he was obliged to engage, laborious and harassing, in adding to the funds of the college, to some extent re-organizing its scheme of instruction, and in various ways re-invigorating its energies.

This involved much physical as well as intellectual exertion; long and laborious journeys, by night as well as by day; addresses to public bodies; fatiguing labors during the weeks of vacation; and sleepless activity in the interests of the institution. The results are the best evidence of the wisdom and energy of these multiform labors. The annoyances, perplexities and difficulties to which he was thus exposed can only be understood by those who have followed similar methods.

Nor was he indifferent to broader interests. When the scheme of this university convocation was first suggested, and the purposes and methods of its organization discussed, I am informed by the able secretary of the Board of Regents, that Dr. Fisher bore a promi-

nent part in the earlier councils, and materially influenced the decisions.

When the civil war broke out, his voice was clear and ringing, with no uncertain sound. He could not change his convictions, and he went to the extreme point of his duty in giving them free and manly utterance.

Success in that awful struggle demanded the most costly sacrifices, but none more beautiful, none more costly than that of the educated young men who demonstrated the truth of the great lessons of patriotism and self-devotion which they had been taught; who asked for themselves no exemption and no privilege but to bear their full share of labor and struggle and danger "in worst ex-extremes, and on the perilous edge of battle."

In placing before them their lofty duty, and privilege, and peril, in stimulating the community in which he moved, in sustaining the rightful authority of the imperiled government, in the humble duties of counsel and sympathy, in all the offices of a generous, far-sighted Christian patriotism, Dr. Fisher bore his full share, according to the measure of his strength.

Doubtless his best and happiest labors were in that profession to which his tastes and affections and early discipline first led him; but he deserves generous praise as well, for his earnest efforts in behalf of learning and culture in every form, for his eloquent words, his ready sympathy, and active co-operation in favor of every thing which might advance that better civilization for which we hope.

PRINCIPAL WILLIAM FOX.

Principal William Fox, of the Angola Union School, was born in Pennsylvania in 1850. He received his education at Forestville Free Academy, Chautauqua county, New York, began his work at Angola, August, 1873, and continued with very great success until failing health compelled him to resign in March, 1874. His death followed in the latter part of the ensuing May. Mr. Fox was one of the most able, thorough and enthusiastic young teachers of the State. He did his work well, and will long live in the remembrance of all who knew him.

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